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UNITED STATES PATENT AND TRADEMARK OFFICE

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June 18, 1985

U.S. DEPARTMENT OF COMMERCE

Patent and Trademark Office

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OFFICIAL GAZETTE of the UNITED STATES PATENT AND TRADEMARK OFFICE

June 18, 1985 Volume 1055 Number 3

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The following are mailed under direction of the Superintendent of Documents, Government Printing Office, Washington, D.C., 20402, to whom all subscriptions should be made payable and all communications addressed:

THE OFFICIAL GAZETTE (PATENT SECTION), issued weekly.
THE OFFICIAL GAZETTE (TRADEMARK SECTION), issued weekly.
GENERAL INFORMATION concerning PATENTS.
GENERAL INFORMATION concerning TRADEMARKS.

COPIES OF PATENTS are furnished by the Patent and Trademark Office at $1.00 each; PLANT PATENTS in color, $8.00 each; copies of TRADEMARKS at $1.00 each. Address orders to the Commissioner of Patents and Trademarks, Washington, D.C., 20231.

Printing authorized by Section 11(a)3 of Title 35, U.S. Code P.T.O.

PATENT AND TRADEMARK OFFICE NOTICES

Patent Cooperation Treaty (PCT) Information

For information concerning the PCT member countries see the notice appearing in the *Official Gazette* at 1052 O.G. 52 on Mar. 26, 1985.

For use of the European Patent Office as a Searching Authority for PCT applications filed in the United States Receiving Office, see the notice appearing in the *Official Gazette* at 1022 O.G. 52 on Sept. 28, 1982.

Domestic PCT fees were increased on Oct. 1, 1982 by a rule change to 37 CFR 1.445 that was published in the *Official Gazette* at 1021 O.G. 11 on Aug. 10, 1982.

The Search fee for the European Patent Office was changed as of May 7, 1985 and was published in the *Official Gazette* at 1053 O.G. 42 on Apr. 16, 1985.

International PCT fees were changed effective May 28, 1985 and were announced in the *Official Gazette* at 1053 O.G. 42 on Apr. 16, 1985.

The current schedule of PCT fees is as follows:

Transmittal fee	$ 125.00
Search fee	
U.S. Patent and Trademark Office as Searching Authority	
• No corresponding prior U.S. national application filed	500.00
• Corresponding prior U.S. national application filed	250.00
European Patent Office as Searching Authority	
• All cases	620.00
International fees	
Basic fee (first 30 pages)	230.00
Basic Supplemental fee (for each page over 30)	4.00
Designation fee (for the first 10 national or regional offices)	55.00
Designation fee for 11th and subsequent designations	No charge

DONALD J. QUIGG,
May 7, 1985. *Acting Commissioner of Patents and Trademarks.*

Notice of Maintenance Fees Payable

Title 37, Code of Federal Regulations, Section 1.362(d), effective Nov. 1, 1984, provides that maintenance fees may be paid without surcharge for a six-month period beginning 3, 7, and 11 years after the date of issue of patents based on applications filed on or after Dec. 12, 1980. An additional six-month grace period is provided by 35 U.S.C. 41(b) and 37 CFR 1.362(e) for payment of the maintenance fee with the surcharge set forth in 37 CFR 1.20(k) or (l), effective Nov. 1, 1984. If the maintenance fee is not paid in a patent requiring such payment, the patent will expire on the 4th, 8th or 12th anniversary of the grant.

Attention is drawn to the patents which were issued on June 15, 1982 for which maintenance fees due at 3 years and six months may now be paid. The patents have patent numbers within the following ranges:

Plant Patents	None
Utility Patents	4,334,325 through 4,335,470

Reissue Patents based on the above identified patents.

No maintenance fees are required for design patents.

Payments of maintenance fees in patents should be directed to "Commissioner of Patents and Trademarks, Box M. Fee, Washington, D.C. 20231."

The current amounts of the maintenance fees due at 3 years and six months are set forth in 37 CFR 1.20(e) and (h), which are reproduced below:

37 CFR §1.20 Post-issuance fees

"(e) For maintaining an original or reissue patent, except a design patent, based on an application filed on or after Dec. 12, 1980 and before Aug. 27, 1982, in force beyond 4 years; the fee is due by three years and six months after the original grant . . . $ 200.00"

"(h) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Aug. 27, 1982, in force beyond 4 years; the fee is due by three years and six months after the original grant:
By a small entity (§1.9(f)) . . . . . $ 200.00
By other than a small entity . . . . . $ 400.00"

The amounts of the surcharges, effective Nov. 1, 1984, are set forth in 37 CFR 1.20(k)-(m), which are reproduced below:

"(k) Surcharge for paying a maintenance fee during the 6-month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Dec. 12, 1980 and before Aug. 27, 1982 . . . . . $ 100.00"

"(l) Surcharge for paying a maintenance fee during the 6-month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Aug. 27, 1982:
By a small entity (§1.9(f)) . . . . . $ 50.00
By other than a small entity . . . . . $ 100.00"

"(m) Surcharge for accepting a maintenance fee after expiration of a patent for non-timely payment of a maintenance fee on a patent based on an application filed on or after Aug. 27, 1982, where the delay in payment is shown to the satisfaction of the Commissioner to have been unavoidable . . . . . $ 500.00"

REISSUE APPLICATIONS FILED

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.19(a)).

4,381,346, Re. S.N. 727,807, Filed Apr. 26, 1985, Cl. 435/215, ISOLATION OF PLASMINOGEN ACTIVATORS USEFUL AS THERAPEUTIC AND DIAGNOSTIC AGENTS, Syed S. Husain, et al., Owner of Record: *Vascular Laboratory, Inc., Boston, Mass.*, Attorney or Agent: John N. Williams, Ex. Gp.: 127

4,381,934, Re. S.N. 729,596, Filed May 2, 1985, Cl. 065/135, GLASS BATCH LIQUEFACTION, Gerald E. Kunkle, et al., Owner of Record: *PPG Industries, Inc., Pittsburgh, Pa.*, Attorney or Agent: Dennis G. Millman, Ex. Gp.: 133

4,428,007, Re. S.N. 729,880, Filed May 2, 1985, Cl. 360/044, METHOD AND APPARATUS FOR DECODING DIGITAL DATA, Masato Tanaka, et al., Owner of Record: *Sony Corp., Tokyo, Japan,* Attorney or Agent: Lewis H. Eslinger, et al., Ex. Gp.: 255

4,454,255, Re. S.N. 730,085, Filed May 3, 1985, Cl. 521/137, PROCESS FOR THE PREPARATION OF WHITE GRAFT POLYMER DISPERSIONS AND FLAME-RETARDANT POLYURETHANE FOAMS, Gerhard G. Ramlow, et al., Owner of Record: *BASF Wyandotte Corp., Wyandotte, Mich.,* Attorney or Agent: Norbert M. Lisicki, et al., Ex. Gp.: 153

4,454,942, Re. S.N. 730,133, Filed May 3, 1985, Cl. 198/424, SYSTEM FOR CONVEYING CONICAL ARTICLES, Yoshio Oizumi, Owner of Record: *Yamakyu Automatics Co., Ltd., Osaka, Japan,* Attorney or Agent: James E. Armstrong, et al., Ex. Gp.: 317

4,459,790, Re. S.N. 730,347, Filed May 3, 1985, Cl. 052/764, WALL PANEL LOCKING MECHANISM, Eugene F. Vermillion, Owner of Record: *The Columbus Show Case Co., Columbus, Ohio,* Attorney or Agent: Gerald L. Smith, et al., Ex. Gp.: 354

4,465,203, Re. S.N. 730,072, Filed May 1, 1985, Cl. 220/268, CAN LID WITH PUSH IN TEAR TAB, G. Steven Lambert, et al., Owner of Record: *Inventor,* Attorney or Agent: Robert A. Cesari, et al., Ex. Gp.: 241

REQUESTS FOR REEXAMINATION FILED

Notice under 37 CFR 1.11(c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.19(a)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1 248(a)(5) and 1.525(b)).

No Publications This Issue.

Erratum

"All reference to Patent No. 4,513,949 to Tomoyuki Ueda, et al. of Japan for 'VALVE ASSEMBLY' appearing in the Official Gazette of Apr. 30, 1985, should be deleted since no patent was granted."

United States Patent and Trademark Office Before the Commissioner of Patents and Trademarks

Joseph F. Nakamura,

Solicitor, U.S. Patent and Trademark Office,

v.

Proceeding No. 84-2
Horace S. Harper, Jr.,
Respondent.

Notice by Publication

Notice is hereby given to the above named respondent, that proceedings under 35 U.S.C. §32 have been instituted against him. A copy of the *NOTICE OF PROCEEDINGS UNDER 35 U.S.C. §32,* including the charges against respondent, was twice mailed to the respondent's address of record. The notice was twice returned by the U.S. Postal Service.

Respondent may obtain of copy of the above-mentioned notice from:

Richard E. Schafer
Associate Solicitor
U.S. Patent and Trademark Office
P.O. Box 15667
Arlington, Va. 22215
(703) 557-4035

This notice will appear in the Official Gazette for four consecutive weeks beginning with the issue of June 11, 1985. Respondent has thirty days from the date of the last notice to file an answer to the charges against him. Failure to file an answer will be taken as an admission of the charges. 37 CFR §1.348 (c).

JOSEPH F. NAKAMURA,
Solicitor

By: RICHARD E. SCHAFER
Associate Solicitor.

U.S. GOVERNMENT-OWNED INVENTIONS
Notice of Availability for Licensing

The inventions listed below are owned by agencies of the U.S. Government and are available for licensing in the U.S. in accordance with 35 U.S.C. 207 to achieve expeditious commercialization of results of federally funded research and development. Foreign patents are filed on selected inventions to extend market coverage for U.S. companies and may also be available for licensing.

Technical and licensing information on specific inventions may be obtained by writing to:

Office of Federal Patent Licensing
U.S. Department of Commerce
P.O. Box 1423
Springfield, Va. 22151

Please cite the number and title of inventions of interest.

DOUGLAS J. CAMPION,
Office of Federal Patent Licensing
National Technical Information Service
U.S. Department of Commerce.

DEPARTMENT OF AGRICULTURE

SN 6-385,674 (4,508,781). FLUORINATION BY INORGANIC FLUORIDES IN GLOW DISCHARGE.

SN 6-423,404 (4,508,736). METHOD FOR PREPARING IMPROVED QUALITY RICE-CONTAINING BAKED PRODUCTS.

SN 6-676,147. A PORTABLE, SELF-POWERED ADJUSTABLE HERBICIDE DISPENSING SYSTEM.

SN 6-708,613. MONOCLONAL ANTIBODIES TO EPIZOOTIC HEMORRHAGIC DISEASE VIRUS ANTIGEN.

SN 6-713,733. PREPARATION OF PELLETS CONTAINING FUNGI FOR CONTROL OF SOIL-BORNE DISEASES.

SN 6-716,798. SYNTHETIC PHEROMONE 5-HYDROXY-4-METHYL-3-HEPTANONE AND ITS USE IN CONTROLLING GRAIN WEEVILS.

DEPARTMENT OF HEALTH AND HUMAN SERVICES

SN 6-446,408 (4,501,151). ULTRASONIC THERAPY APPLICATOR THAT MEASURES DOSAGE.

SN 6-582,862 (4,508,820). METHOD FOR SIMULTANEOUSLY MONITORING TURNOVER RATE IN MULTIPLE PROTEINS.

SN 6-706,622. USE OF PARAMAGNETIC METALLOPORPHYRINS AS CONTRAST AGENTS FOR TUMORS IN NMR IMAGING.

SN 6-712,102. NON-AQUEOUS DENTAL CEMENTS BASED ON DIMER AND TRIMER ACIDS.
SN 6-712,236. ADENO-ASSOCIATED VIRUS AS EUKARYOTIC EXPRESSION VECTOR.
SN 6-724,897. SOLUBLE INTERLEUKIN-2 RECEPTOR AS A DISEASE INDICATOR AND A METHOD OF ASSAYING THE SAME.

DEPARTMENT OF THE AIR FORCE

SN 6-256,880 (4,500,255). SPACER STRUCTURE.
SN 6-370,234 (4,499,468). RANGE-ONLY MULTISTATIC RADAR SYSTEM.
SN 6-398,134 (4,505,582). SELF-DETECTING OPTICAL SENSORS.
SN 6-407,985 (4,507,602). MEASUREMENT OF PERMITTIVITY AND PERMABILITY OF MICROWAVE MATERIALS.
SN 6-434,671 (4,500,206). OPTICAL SYSTEM FOR MEASURING SHADOWGRAPH DATA.
SN 6-442,494 (4,499,761). SNOW SCALE/RATE METER.
SN 6-477,793 (4,499,156). TITANIUM METAL-MATRIX COMPOSITES.
SN 6-484,327 (4,498,184). JINC-TRAP RESONATOR.
SN 6-484,390 (4,503,668). STRUTLESS DIFFUSER FOR GAS TURBINE.
SN 6-498,336 (4,499,395). CUT ANGLES FOR QUARTZ CRYSTAL RESONATORS.
SN 6-564,547 (4,499,334). HEAT RESISTANT SHEATHED INSULATED ELECTRICAL CONDUCTORS.
SN 6-566,444 (4,501,636). APPARATUS FOR ETCHING VERTICAL JUNCTION SOLAR CELL WAFERS.
SN 6-578,304 (4,499,735). SEGMENTED ZONED FUEL INJECTION SYSTEM FOR USE WITH A COMBUSTOR.
SN 6-586,953 (4,501,929). MULTICONDUCTOR FLAT CABLE.
SN 6-615,507 (4,499,258). POLYAROMATIC ETHER-SULFONE-KEYTONES WITH FLUORO-SUBSTITUTED-P-CYCLOPHANE UNITS AS CROSS-LINKED SITES.
SN 6-675,115. CORROSION INHIBITOR FORMULATION FOR MOLYBDENUM, TUNGSTEN AND OTHER METALS.
SN 6-679,327. PARALLEL PROGRAMMABLE CHARGE DOMAIN DEVICE.
SN 6-679,332. PIPELINED PROGRAMMABLE CHARGE DOMAIN.
SN 6-688,944. NIGHT VISION COMPATIBLE ILLUMINATION FOR VEHICLE CREWMEMBER WORKSPACE.
SN 6-690,541. TECHNIQUE TO REDUCE SCATTERED LIGHT IN OPTICAL SYSTEMS.
SN 6-696,679. GENERATION AND DISPLAY APPARATUS.
SN 6-696,680. SYNTHESIS OF GEMINAL DINITRO COMPOUNDS.
SN 6-698,721. MODE DEPENDENT, OPTICAL TIME DELAY SYSTEM FOR ELECTRICAL SIGNALS.
SN 6-698,725. ADCCP COMMUNICATION PROCESSOR.
SN 6-698,726. PRINTED WIRING BOARD CIRCUIT ISOLATOR TOOL.
SN 6-698,957. HEAT PIPE AND METHOD OF MAKING SAME.
SN 6-698,963. STABILIZING FORCE FEEDBACK IN BIO-ACTUATED CONTROL SYSTEM.
SN 6-698,977. LENGTH DEPENDENT, OPTICAL TIME DELAY/FILTER DEVICE FOR ELECTRICAL SIGNALS.
SN 6-704,109. SYSTEM OF WHITE-LIGHT DENSITY PSEUDOCOLOR ENCODING WITH THREE PRIMARY COLORS.
SN 6-705,816. TELESCOPING LOW VIBRATION PULLING MECHANISM FOR CZOCHRALSKI CRYSTAL GROWTH.
SN 6-705,827. SURVIVABLE GROUND BASE SENSOR.
SN 6-708,926. SPATIAL LIGHT MODULATOR HAVING A CAPACITIVELY COUPLED PHOTOCONDUCTOR.

DEPARTMENT OF THE ARMY

SN 6-047,456 (4,280,767). PRINTING APPARATUS.
SN 6-086,504 (4,344,010). ACCELERATION RESISTANT COMBINATION OF OPPOSITE-HANDED PIEZOELECTRIC CRYSTALS.
SN 6-196,508 (4,356,182). METHOD OF FABRICATING ACCELERATION RESISTANT CRYSTAL RESONATORS AND ACCELERATION RESISTANT CRYSTAL RESONATORS SO FORMED.
SN 6-253,874 (4,395,148). POSITIONING OF A MULTICOLOR RIBBON.
SN 6-343,644 (4,453,141). SUPPRESSION OF VIBRATION EFFECTS ON PIEZOELECTRIC CRYSTAL RESONATORS.
SN 6-389,315 (4,410,822). ACCELERATION-RESISTANT CRYSTAL RESONATOR.
SN 6-434,998 (4,451,755). ACCELERATION SENSITIVITY REDUCTION METHOD.
SN 6-467,337 (4,426,168). SERIAL IMPACT PRINTER FOR MULTICOLOR PRINTING.
SN 6-631,936 (4,073,371). APPARATUS AND CIRCUITS FOR TWO-COLOR PRINTING IN ELECTRONIC IMPACT PRINTERS.
SN 6-699,282. A NONDESTRUCTIVE NONCONTACT DEVICE TO CHARACTERIZE SEMICONDUCTOR MATERIALS.
SN 6-702,114. TOPICAL PROPHYLAXIS AGAINST SCHISTOSOMAL INFECTIONS.
SN 6-702,294. A SIMPLE POWER METER FOR HIGH ENERGY PULSED LASERS.
SN 6-712,943. GROUND SLOT WAVEGUIDE LASER.
SN 6-714,602. A METHOD AND APPARATUS FOR THE PRESSING AND ALIGNMENT OF RADIALLY ORIENTED TOROIDAL MAGNETS.
SN 6-714,784. DOT MATRIX COLOR PRINTER.
SN 6-715,215. METHOD OF PREPARING NON-LAMINATING ANISOTROPIC BORON NITRIDE.
SN 6-715,808. METHOD OF PRETREATING CARBON BLACK POWDER TO IMPROVE CATHODE PERFORMANCE AND LITHIUM SULFURYL CHLORIDE CELL INCLUDING THE PRETREATED CARBON BLACK POWDER.
SN 6-715,862. ACCELERATION INSENSITIVE OSCILLATOR.
SN 6-717,990. MULTI-TRACK OPTICAL SHAFT POSITION AND TIMING CYLINDER.
SN 6-721,096. OPTICALLY CONTROLLED MULTI-COLOR IMPACT PRINTER.

DEPARTMENT OF THE INTERIOR

SN 6-455,187 (4,501,448). UNIVERSAL RIPPER MINER.

TENNESSEE VALLEY AUTHORITY

SN 6-584,285 (4,511,388). PRODUCTION OF HIGH-ANALYSIS AMMONIUM ORTHOPHOSPHATE SUSPENSION FERTILIZERS BY A NEW BATCH-TYPE PROCESS.
SN 6-605,345 (4,512,793). GRANULATION OF UREA PHOSPHATE FROM UREA AND MERCHANT-GRADE PHOSPHORIC ACID.

PATENT NOTICES

Certificates of Correction for the Week of June 18, 1985

Re. 31,587	4,464,371	4,484,652	4,495,893
Re. 31,684	4,464,662	4,484,883	4,495,945
D. 277,064	4,464,789	4,485,038	4,496,201
3,997,209	4,465,150	4,485,234	4,497,361
4,178,072	4,467,105	4,485,398	4,497,734
4,301,720	4,469,517	4,485,420	4,497,908
4,314,908	4,472,996	4,485,512	4,498,272
4,322,304	4,473,877	4,485,829	4,498,501
4,354,145	4,473,937	4,485,892	4,498,799
4,354,848	4,474,955	4,485,941	4,498,828
4,377,671	4,475,148	4,485,968	4,499,006
4,381,358	4,476,302	4,486,119	4,499,015
4,382,882	4,476,520	4,486,132	4,499,383
4,393,156	4,476,553	4,486,286	4,499,446
4,400,409	4,477,032	4,486,406	4,499,469
4,403,005	4,477,050	4,486,813	4,499,511
4,424,389	4,477,624	4,487,048	4,499,549
4,425,112	4,477,658	4,487,355	4,499,925
4,426,072	4,477,697	4,488,008	4,499,931
4,427,591	4,478,065	4,488,750	4,499,961
4,431,463	4,478,171	4,489,160	4,500,089
4,432,498	4,478,205	4,489,798	4,500,418
4,436,925	4,478,243	4,490,689	4,500,431
4,441,113	4,478,271	4,491,387	4,500,586
4,442,130	4,478,283	4,491,807	4,501,122
4,442,637	4,478,353	4,492,103	4,501,578
4,445,279	4,478,394	4,492,254	4,501,603
4,447,525	4,478,418	4,492,271	4,501,799
4,448,866	4,478,601	4,492,390	4,501,855
4,449,352	4,478,806	4,492,578	4,502,197
4,449,539	4,478,954	4,492,701	4,502,301
4,450,227	4,479,007	4,492,820	4,502,956
4,451,484	4,479,719	4,492,891	4,503,326
4,452,049	4,481,616	4,493,130	4,503,435
4,452,221	4,482,847	4,494,064	4,503,555
4,456,897	4,482,931	4,494,227	4,504,786
4,459,088	4,483,128	4,494,395	4,504,909
4,459,241	4,483,861	4,495,058	4,507,179
4,459,674	4,483,952	4,495,088	
4,460,597	4,484,429	4,495,339	

Disclaimers

4,073,943.—*Karl Arvid Johannes Wretlind,* Stockholm; *Stellan Ljungberg,* Lidingo; *Ivan Hakansson,* Huddinge and *Bengt Magnus Ajaxon,* Uppsala, Sweden. METHOD OF ENHANCING THE ADMINISTRATION OF PHARMALOGICALLY ACTIVE AGENTS. Patent dated Feb. 14, 1978. Disclaimer filed May 29, 1984, by the assignee, *KabiVitrum AB.*

Hereby enters this disclaimer to the remaining term of said patent.

4,371,863.—*George H. Fritzinger,* Edison, N.J. TRAFFIC-ACTUATED CONTROL SYSTEMS PROVIDING AN ADVANCE SIGNAL TO INDICATE WHEN THE DIRECTION OF TRAFFIC WILL CHANGE. Patent dated Feb. 1, 1983. Disclaimer filed Aug. 9, 1984, by the inventor.

The term of this patent subsequent to October 1, 1998 has been disclaimed.

4,430,421.—*Christian C. Van de Sande,* Belsele; *Jan J. Vandewalle,* Mortsel; *Raphael K. Van Poucke,* Berchem and *Andre K. Claes,* Oevel, Belgium. METHOD OF DISPERSING PHOTOGRAPHIC ADJUVANTS IN HYDROPHILIC COLLOID COMPOSITIONS. Patent dated Feb. 7, 1984. Disclaimer filed Apr. 1, 1985, by the assignee, *Agfa-Gevaert.*

Hereby enters this disclaimer to all claims of said patent.

Reference Collections of U.S. Patents Available for Public Use in Patent Depository Libraries

The following libraries, designated as Patent Depository Libraries, receive current issues of U.S. Patents and maintain collections of earlier issued patents. The scope of these collections varies from library to library, ranging from patents of only recent years to all or most of the patents issued since 1790.

These patent collections are open to public use and each of the Patent Depository Libraries, in addition, offers the publications of the U.S. Patent Classification System (e.g. The Manual of Classification, Index to the U.S. Patent Classification, Classification Definitions, etc.) and provides technical staff assistance in their use to aid the public in gaining effective access to information contained in patents. With one exception, as noted in the table following, the collections are organized in patent number sequence.

Facilities for making paper copies from either microfilm in reader-printers or from the bound volumes in paper-to-paper copies are generally provided for a fee.

Owing to variations in the scope of patent collections among the Patent Depository Libraries and in their hours of service to the public, anyone contemplating use of the patents at a particular library is advised to contact that library, in advance, about its collection and hours, so as to avert possible inconvenience.

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	Birmingham Public Library	(205) 226-3680
Alaska	Anchorage Municipal Libraries	(907) 264-4481
Arizona	Tempe: Science Library, Arizona State University	(602) 965-7607
Arkansas	Little Rock: Arkansas State Library	(501) 371-2090
California	Los Angeles Public Library	(213) 612-3273
	Sacramento: California State Library	(916) 322-4572
	San Diego Public Library	(619) 236-5813
	Sunnyvale: Patent Information Clearinghouse*	(408) 738-5580
Colorado	Denver Public Library	(303) 571-2122
Delaware	Newark: University of Delaware Library	(302) 738-2238
Florida	Fort Lauderdale: Broward County Main Library	(305) 357-7444
	Miami–Dade Public Library	(305) 579-5001
Georgia	Atlanta: Price Gilbert Memorial Library, Georgia Institute of Technology	(404) 894-4508
Idaho	Moscow: University of Idaho Library	(208) 885-6235
Illinois	Chicago Public Library	(312) 269-2865
	Springfield: Illinois State Library	(217) 782-5430
Indiana	Indianapolis–Marion County Public Library	(317) 269-1706
Louisiana	Baton Rouge: Troy H. Middleton Library, Louisiana State University	(504) 388-2570
Maryland	College Park: Engineering and Physical Sciences Library, University of Maryland	(301) 454-3037
Massachusetts	Amherst: Physical Sciences Library, University of Massachusetts	(413) 545-1370
	Boston Public Library	(617) 536-5400 Ext. 265
Michigan	Ann Arbor: Engineering Transportation Library, University of Michigan	(313) 764-7494
	Detroit Public Library	(313) 833-1450
Minnesota	Minneapolis Public Library & Information Center	(612) 372-6570
Missouri	Kansas City: Linda Hall Library	(816) 363-4600
	St. Louis Public Library	(314) 241-2288 Ext. 390
Montana	Butte: Montana College of Mineral Science and Technology Library	(406) 496-4283
Nebraska	Lincoln: University of Nebraska-Lincoln, Engineering Library	(402) 472-3411
Nevada	Reno: University of Nevada Library	(702) 784-6579
New Hampshire	Durham: University of New Hampshire Library	(603) 862-1777
New Jersey	Newark Public Library	(201) 733-7815
New Mexico	Albuquerque: University of New Mexico Library	(505) 277-5441
New York	Albany: New York State Library	(518) 474-5125
	Buffalo and Erie County Public Library	(716) 856-7525 Ext. 267
	New York Public Library (The Research Libraries)	(212) 714-8529
North Carolina	Raleigh: D. H. Hill Library, N.C. State University	(919) 737-3280
Ohio	Cincinnati & Hamilton County, Public Library of	(513) 369-6936
	Cleveland Public Library	(216) 623-2870
	Columbus: Ohio State University Libraries	(614) 422-6286
	Toledo/Lucas County Public Library	(419) 255-7055 Ext. 212
Oklahoma	Stillwater: Oklahoma State University Library	(405) 624-6546
Oregon	Salem: Oregon State Library	(503) 378-4243
Pennsylvania	Cambridge Springs: Alliance College Library	(814) 398-2098
	Philadelphia: Franklin Institute Library	(215) 448-1227
	Pittsburgh: Carnegie Library of Pittsburgh	(412) 622-3138
	University Park: Pattee Library, Pennsylvania State University	(814) 865-4861
Rhode Island	Providence Public Library	(401) 521-8726
South Carolina	Charleston: Medical University of South Carolina Library	(803) 792-2372
Tennessee	Memphis & Shelby County Public Library and Information Center	(901) 725-8876
Texas	Austin: McKinney Engineering Library, University of Texas	(512) 471-1610
	College Station: Sterling C. Evans Library, Texas A & M University	(409) 845-2551
	Dallas Public Library	(214) 749-4176
	Houston: The Fondren Library, Rice University	(713) 527-8101 Ext. 2587
Utah	Salt Lake City: Marriott Library, University of Utah	(801) 581-8394
Washington	Seattle: Engineering Library, University of Washington	(206) 543-0740
Wisconsin	Madison: Kurt F. Wendt Engineering Library, University of Wisconsin	(608) 262-6845
	Milwaukee Public Library	(414) 278-3247

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*Collection organized by subject matter.

PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner

JAMES E. DENNY, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF May 11, 1985

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL METALLURGICAL, INORGANIC, PETROLEUM AND ELECTRICAL CHEMISTRY, AND ENGINEERING, GROUP 110—D. E. TALBERT, Director	3-28-83
ORGANIC CHEMISTRY AND BIOTECHNOLOGY, GROUP 120—C. E. VAN HORN, Director	6-01-83
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 130—R. F. WHITE, Director	3-08-84
HIGH POLYMER CHEMISTRY, PLASTICS, COATING, PHOTOGRAPHY, STOCK MATERIALS AND COMPOSITIONS, GROUP 150—J. O. THOMAS, Director	5-24-83
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—G. GOLDBERG, Director	11-05-82
SPECIAL LAWS ADMINISTRATION, GROUP 220—K. L. CAGE, Director	1-04-83
INFORMATION PROCESSING, STORAGE, AND RETRIEVAL, GROUP 230—E. LEVY, Director	5-17-82
RECEPTACLES, CLEANING, WINDING, AND MEASURING, GROUP 240—G. M. FORLENZA, Director	7-23-82
ELECTRONIC AND OPTICAL SYSTEMS AND DEVICES, GROUP 250—S. S. MATTHEWS, Director	4-30-82
COMMUNICATIONS, MEASURING, TESTING AND LAMP/DISCHARGE GROUP, GROUP 260—S. G. KUNIN, Director	1-03-83
DESIGN, GROUP 290—K. L. CAGE, Director	1-03-83
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—B. R. GRAY, Director	7-12-83
MATERIAL SHAPING, ARTICLE MANUFACTURING AND TOOLS, GROUP 320—S. N. ZAHARNA, Director	5-26-83
MECHANICAL TECHNOLOGIES AND HUSBANDRY PERSONAL TREATMENT INFORMATION, GROUP 330—R. E. AEGERTER, Director	3-08-83
SOLAR, HEAT, POWER, AND FLUID ENGINEERING DEVICES, GROUP 340—D. J. STOCKING, Director	4-14-83
GENERAL CONSTRUCTIONS, PETROLEUM AND MINING ENGINEERING, GROUP 350—A. L. SMITH, Director	6-17-83

Expiration of patents: The patents within the range of numbers indicated below expire during May 1985, except those which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents ..... Numbers 3,381,303 to 3,386,102, inclusive

Plant Patents ..... Numbers 2,811 to 2,813 inclusive

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 31,914

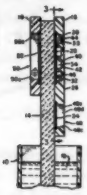
ELECTROCHEMICAL GAS DETECTION METHOD

Harry G. Oswin, Chauncey, and Keith F. Blurton, Ossining, both of N.Y., assignors to Becton Dickinson & Company, Paramus, N.J.

Original No. 3,992,267, dated Nov. 16, 1976, Ser. No. 569,851, Apr. 21, 1975. Continuation of Ser. No. 402,733, Oct. 2, 1973, abandoned, which is a division of Ser. No. 88,267, Nov. 10, 1970, Pat. No. 3,776,832. Application for reissue Apr. 29, 1981, Ser. No. 258,879

Int. Cl.³ G01N *27/46*

U.S. Cl. 204—1 T **6 Claims**



1. The method of quantitatively detecting a gaseous noxious atmospheric pollutant selected from the group consisting of carbon monoxide, nitric oxide, hydrocarbons, ethanol and methanol in air in an electrochemical cell comprising an anode *having a catalyst bonded to a polytetrafluoethylene membrane to provide a porous diffusion electrode*, a cathode, a reference electrode through which no substantial current flows, *each of said anode, cathode and reference electrodes having a catalyst surface the catalyst of* said anode *catalyst surface* being selected from the group consisting of platinum, rhodium, iridium, ruthenium, palladium, osmium, tungsten oxide, tungsten carbide, molybdenum oxide, molybdenum sulfide, and alloys or mixtures thereof, and an aqueous electrolyte *within an electrolyte container* in contact with *the catalyst surface of* said anode, cathode, and reference electrodes*said reference electrode contacting air; said anode being positioned in said cell so that one surface of said anode contacts ambient air containing said pollutant to be detected and the opposite surface contacts said electrolyte whereby the noxious pollutant to be detected migrates from the surface contacting said ambient air to the internal catalytic surface of said anode to interface with said electrolyte for electrochemical reaction in the presence of said catalyst* including the steps of (1) feeding an air sample containing the noxious gas to be detected to the anode of said cell, said sample being substantially free of other noxious gases; (2) maintaining said anode *by means of a potentiostat* at a fixed potential of from about 0.9 to 1.5 volts with respect to the reversible hydrogen couple in the electrolyte of said cell relative to said reference electrode to oxidize said noxious gaseous substance and simultaneously insure that current due to oxygen reduction or water oxidation within said electrochemical cell is not discernible relative to the level of current produced by said oxidation of gaseous substance; and (3) measuring the current flowing between said anode and cathode of said cell to quantitatively determine the amount of said gaseous substance to be detected in said gaseous sample, *said measured current being an indication of the concentration of the gas being detected.*

Re. 31,915

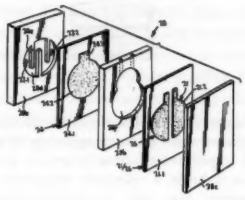
GAS DETECTING AND MEASURING DEVICE

Harry G. Oswin, Chauncey, and Keith F. Blurton, Ossining, both of N.Y., assignors to Becton Dickinson & Company, Paramus, N.J.

Original No. 3,824,167, dated Jul. 16, 1974, Ser. No. 172,486, Aug. 17, 1871. Continuation-in-part of Ser. No. 88,267, Nov. 10, 1970, Pat. No. 3,776,832. Application for reissue Apr. 29, 1981, Ser. No. 258,753

Int. Cl.³ G01N *27/46*

U.S. Cl. 204—412 **16 Claims**



1. A gas *device for continuously, quantitatively* detecting and measuring [unit] *a noxious gas in the presence of air,* comprising in combination intake means, an electrochemical cell, means for drawing a gas through said intake means and into said electrochemical cell at a controlled flow rate, [and readout means for reading the quantity of said detected gas,] said electrochemical cell comprising *a housing,* an anode *comprising catalyst bonded to a hydrophobic fluorocarbon membrane to provide a diffusion electrode*, a cathode, a reference electrode at which substantially no current flows, *all positioned within said housing,* and an aqueous electrolyte in an electrolyte chamber, [said electrolyte being in contact with] *each of* said anode, cathode, and reference [electrode,] *electrodes having a catalyst surface containing said electrolyte and said reference electrode contacting air,* means for exposing said anode to a gas to be detected *in the presence of air, potentiostat* means [for] maintaining said anode at a fixed potential relative to the reference electrode of from about 0.7 to 1.5 volts with respect to a reversible hydrogen electrode potential in said electrolyte of said cell, within which range oxygen reduction or oxidation of water to oxygen does not occur, [said anode comprising a catalyst bonded to a hydrophobic fluorocarbon to provide a d.[illegible]usion electrode and] said catalyst *of said anode catalyst surface* catalyzing an electrochemical reaction with a gas selected from the group consisting of CO, hydrocarbons, alcohols, NO, NO_2 and SO_2 at said fixed potential, *said anode being arranged in said cell so that one surface of said anode contacts said gas exposing means and the opposite surface contacts said electrolyte whereby the noxious gas to be detected migrates from the surface contacting said exposing means to the internal surface of said anode to interface with the electrolyte for electrochemical reaction in the presence of said catalyst, means for continuously measuring said current flowing between said anode and cathode of said cell, said measured current being a measure of the concentration of the gas being detected, and read-out means for continuously reading said concentration of gas being detected.*

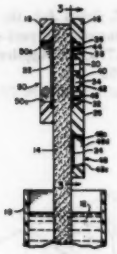
Re. 31,916
ELECTROCHEMICAL DETECTION CELL

Harry G. Oswin, Chauncey, and Keith F. Blurton, Ossining, both of N.Y., assignors to Becton Dickinson & Company, Paramus, N.J.

Original No. 3,776,832, dated Dec. 4, 1973, Ser. No. 88,267, Nov. 10, 1970. Application for reissue Apr. 29, 1981, Ser. No. 258,752

Int. Cl.³ G01N *27/46*

U.S. Cl. 204—412 **9 Claims**



1. An electrochemical cell for quantitatively detecting a *noxious* gas *in the presence of air* comprising an anode having catalyst bonded to polytetrafluoroethylene to provide a diffusion electrode, a cathode, a reference electrode *at which substantially no current flow*, and an aqueous electrolyte [in contact with] *within an electrolyte container, each of said anode, cathode and reference electrode having a catalytic surface contacting* said [anode, cathode and reference electrode;] *electrolyte, and said reference electrode contacting air,* means for exposing said anode to a [gaseous substance] *gas containing a noxious gas* to be detected; *said anode being arranged in said cell so that one surface of said anode contacts said gas exposing means and the opposite surface contacts said electrolyte whereby the noxious gas to be detected migrates from the surface contacting said gas exposing means to the internal surface of said anode to interface with the electrolyte for reaction in the presence of the catalyst,* means connecting said anode and reference electrode, said latter means being a potentiostat [for] maintaining a fixed potential on said anode relative to said reference electrode of from about 0.9 to 1.5 volts with respect to the potential of the reversible hydrogen couple in the electrolyte of said cell which potential is independent of the concentration of the *noxious* gas to be detected and means for measuring said current flowing between sad anode and cathode of said cell, said measured current being a measure of the concentration of the gas being detected.

Re. 31,917
VALVE TIMING MECHANISMS

Stephen W. Mitchell, 93 Lowercroft Rd., Starling, Bury, Lancashire, England

Original No. 4,131,096, dated Dec. 26, 1978, Ser. No. 779,877, Mar. 21, 1977. Application for reissue Dec. 16, 1982, Ser. No. 450,343

Claims priority, application United Kingdom, Apr. 2, 1976, 13370/76

Int. Cl.³ F01L *1/34*

U.S. Cl. 123—90.15 **18 Claims**

18. A valve timing mechanism for an internal combustion engine including

a crankshaft;

at least one cylinder;

an inlet valve and an outlet valve for said cylinder;

means defining first and second axes of rotation;

an inlet camshaft mounted to rotate about said first axis of rotation and carrying an inlet valve cam to operate said inlet valve, and an exhaust camshaft mounted to rotate about said second axis of rotation and carrying an exhaust valve cam to operate said exhaust valve;

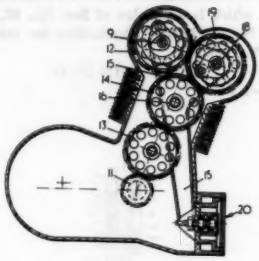
a member movable in dependence upon an engine operating condition;

a driving mechanism driven from said crankshaft and mounted on said movable member;

means defining third and fourth axes of rotation;

said driving mechanism comprising

a first rotary member, mounted to rotate about said third axis and eccentrically-connected to said inlet camshaft, said third axis being parallel to but displaceable relative to said first axis, and



a second rotary member, mounted to rotate about said fourth axis and eccentrically-connected to said exhaust camshaft, said fourth axis being parallel to but displaceable relative to said second axis;

said third and fourth axes being fixed to said movable member and relative to each other, whereby said movement of said movable member varies the said eccentricity of said connections between said first rotary member and said inlet camshaft and said second rotary member and said exhaust camshaft, thereby varying the rate of angular movement of said camshafts relative to the angular movement of said crankshaft and so varying the timing of said inlet and exhaust valves.

Re. 31,918
PHOTOGRAPHIC COLOR SEPARATION EQUIPMENT

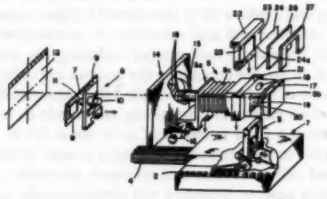
Emile A. H. Guillaume, Ballaigues, Switzerland, assignor to Zelacolor Systems Establishment, Vaduz, Liechtenstein

Original No. 3,984,849, dated Oct. 5, 1976, Ser. No. 501,187, Aug. 27, 1974. Application for reissue Feb. 21, 1978, Ser. No. 879,731

Claims priority, application Switzerland, Aug. 28, 1975, 12337

Int. Cl.³ G03B *33/00*

U.S. Cl. 354—100 **43 Claims**



17. In a photographic apparatus, a mechanism for feeding photographic film, comprising:

a first film transport member; moving means for moving said film transport member in a first direction across an optical axis of the apparatus and for moving said film transport member in a second direction opposite to said first direction; said motions in said first and second directions of said film

transport member being relative motions with respect to a first film transport means;

guide means supported by and movable with said film transport member and over which the film is passed;

the film being fed from a first side of said film transport member over said guide means to the opposite second side of said film transport member;

said first film transport means being located at said second side of said film transport member; and

retaining means for holding film that is in engagement with said first film transport means relatively stationary with respect to said first film transport means as said film transport member moves in said first and in said second directions whereby the film is moved past said guide means as said film transport member moves in said first and said second directions thereof, said film transport member being moved in said first direction before each exposure of a portion of said film and in said second direction after each exposure.

Re. 31,919

AROMATICS PROCESSING CATALYSTS

Stephen A. Butter, and Arthur W. Chester, both of Cherry Hill, N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Original No. 4,312,790, dated Jan. 26, 1982, Ser. No. 140,343, Apr. 14, 1980. Application for reissue Aug. 25, 1983, Ser. No. 526,257

Int. Cl.[3] **B01J** *29/32*

U.S. Cl. 502—66 **31 Claims**

1. A method for preparing a noble metal-containing zeolite catalyst which comprises incorporating a noble metal in a cationic form with a zeolite after crystallization of the zeolite, prior to final catalyst particle formation and prior to any calcination or steaming of said zeolite, said zeolite being characterized by a silica to alumina mole ratio of at least 12 and a Constraint Index in the approximate range of 1 to 12.

26. An improved method for preparing a composite zeolite-alumina catalyst wherein a crystalline zeolite having a silica to alumina mole ratio of at least 200 and a Constraint Index of about 1 to 12 has controlled acid activity by utilizing said zeolite in combination with alumina binder and steam treatment at elevated temperature;

which comprises incorporating a noble metal in a cationic form with the zeolite after crystallization of the zeolite, prior to final composite catalyst formation and prior to any calcination or steaming of the zeolite.

29. In the method for preparing a composite zeolite-alumina catalyst wherein a crystalline zeolite having a silica to alumina mole ratio of at least 200 and a Constraint Index of about 1 to 12 has controlled acid activity by utilizing said zeolite in combination with alumina binder and steam treatment at elevated temperature; the improvement which comprises mulling alumina binder with the zeolite and water to form an extrudable mass; forming the composite catalyst by extrusion of the zeolite-alumina mixture, calcining the extrudate composite, and steam treating the calcined composite.

PLANT PATENTS

GRANTED JUNE 18, 1985

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

5,493

AFRICAN VIOLET PLANT NAMED ELLEN

Reinhold Holtkamp, Isselburg, Fed. Rep. of Germany, assignor to Gesellschaftsvertrag uber die Erfindergemeinschaft "Optimara", Rees Haffen, Fed. Rep. of Germany

Filed Sep. 23, 1983, Ser. No. 535,261
Int. Cl.[3] A01H *5/00*
U.S. Cl. Plt.—69 **1 Claim**

1. A new and distinct cultivar of African violet plant named Ellen, as described and illustrated, and particularly characterized by its intensive pink flowers which do not fade under high temperatures, upright flower stems which carry the flower bouquet centrally above the foliage, vigorous compact growth habit, and by its very long lasting flowers that are non-dropping.

5,494

AFRICAN VIOLET PLANT NAMED SABRINA

Reinhold Holtkamp, Isselburg, Fed. Rep. of Germany, assignor to Gesellschaftsvertrag uber die Erfindergemeinschaft "Optimara", Rees Hafen, Fed. Rep. of Germany

Filed Sep. 23, 1983, Ser. No. 535,395
Int. Cl.[3] A01H *5/00*
U.S. Cl. Plt.—69 **1 Claim**

1. A new and distinct cultivar of African violet plant named Sabrina, as described and illustrated, and particularly characterized by its red-purple flowers carried on upright flower stems, with the bouquet being compact and positioned centrally above the foliage, its compact growth habit, and its continuous flowering habit.

5,495

CHRYSANTHEMUM PLANT NAMED EXCEL

William E. Duffett, Salinas, Calif., assignor to Yoder Brothers, Inc., Barberton, Ohio

Filed Feb. 18, 1983, Ser. No. 468,034
Int. Cl.[3] A01H *1/00*
U.S. Cl. Plt.—76 **1 Claim**

1. A new and distinct cultivar of *Chrysanthemum morifolium,* Ramat., named Excel, as described and illustrated, and particularly characterized as to uniqueness by the combined characteristics of flat capitulum form; decorative capitulum type; lavender ray floret color; diameter across face of capitulum ranging from 55 to 70 mm. at maturity; uniform eight week flowering response; tall plant height, and spreading branching pattern.

5,496

CHRYSANTHEMUM PLANT DIANA

Margot J. Persoon, and Johannes A. Persoon, both of 4998 Foothill Rd., Carpinteria, Calif. 93013

Filed May 17, 1983, Ser. No. 495,473
Int. Cl.[3] A01H *5/00*
U.S. Cl. Plt.—76 **1 Claim**

1. A new and distinctive cultivar of chrysanthemum plant, substantially as herein described, and distinguished from its parent by a darker flower color and increased "rolled" or "spoon shaped" petals.

5,497

POINSETTIA PLANT NAMED V-14 HOT PINK

Dennis Deibel, Crestwood, Ky., assignor to Paul Ecke, Jr., Encinitas, Calif.

Filed Jul. 1, 1983, Ser. No. 510,423
Int. Cl.[3] A01H *5/00*
U.S. Cl. Plt.—86 **1 Claim**

1. A new and distinctive poinsettia cultivar, substantially as herein shown and described, distinguished by the warm and deep pink coloration of its bracts which are tightly centered and present a very compact display.

PATENTS

GRANTED JUN. 18, 1985

ERRATA

For CLASS	See PATENT NO.
227–008	4,523,695
211–175	4,523,722
384–604	4,523,793
098–002	4,523,870
514–023	4,524,066
514–033	4,524,067
514–058	4,524,068
514–171	4,524,069
514–230	4,524,070
514–272	4,524,071
514–280	4,524,072
514–080	4,524,073
514–321	4,524,074
514–451	4,524,075
514–472	4,524,076
514–557	4,524,077
536–079	4,524,193
365–154	4,524,429

PATENTS

GRANTED JUNE 18, 1985

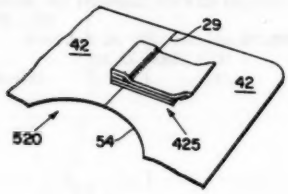
GENERAL AND MECHANICAL

4,523,333

DISPOSABLE BIB HAVING TAPE-TAB FASTENER

Richard A. Spangler, Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Filed Nov. 4, 1983, Ser. No. 549,370
Int. Cl.³ A41B *13/10*; A41D *13/04*
U.S. Cl. 2—49 R **9 Claims**



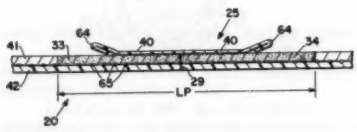
1. A disposable bib comprising a body panel having a neck-accommodating aperture, means defining a predetermined manually partable line-of-parting extending between the edge of said aperture and an adjacent outer edge of said body panel, and a tape-tab fastener, said line-of-parting being disposed and configured to, when parted, enable the portions of said bib disposed adjacent the opposite sides of said line-of-parting to be spread apart to enable fitting said bib about the neck of the user, said fastener comprising a factory-bond end and a mother's-bond end, said factory-bond end being adhered by adhesive thereon to the back surface of said bib adjacent said line-of-parting, said fastener being configured and disposed to enable extending said mother's-bond end across said line-of-parting when parted and adhering it by adhesive thereon to a mother's-bond area of the front surface of said bib, said line-of-parting being an unbroken line-of-severance through said body panel, and said factory-bond end of said fastener comprising a distal portion and a proximal portion, said fastener being so disposed prior to parting said line-of-parting, that said proximal portion and said distal portion are disposed on opposite sides of said line-of-parting, said bib further comprising means for said proximal portion to be peelable from said back surface of said bib whereby said line-of-parting may be parted by peeling said proximal portion from said back surface of said bib.

4,523,334

DISPOSABLE BIB HAVING FIBROUS TOPSHEET WHEREIN MOTHER'S-BOND ZONE IS IMPREGNATED WITH BONDING MATERIAL

Bruce W. Lavash, Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Filed Nov. 4, 1983, Ser. No. 549,371
Int. Cl.³ A41B *13/10*; A41D *13/04*
U.S. Cl. 2—49 R **3 Claims**



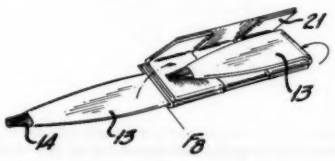
1. A disposable bib comprising a fibrous topsheet, a liquid impervious backsheet, means bonding said topsheet and said backsheet together in laminated relation, a neck accommodating aperture disposed adjacent one end of said bib, a line-of-parting extending from the edge of said neck accommodating aperture to an adjacent outer edge of said bib, and securement means for bridging said line-of-parting after parting to secure said bib on a wearer for use, said securement means comprising a mother's-bond area of said topsheet disposed adjacent said line-of-parting, and a tape-tab fastener disposed and configured to bridge said line-of-parting when parted with a first end of said tape-tab fastener secured by pressure sensitive adhesive thereon to the front surface of said mother's-bond area, said fibrous topsheet having an insufficient inherent strength property to enable operative association with said first end of said tape-tab fastener, said mother's-bond area being a zone of said topsheet which is sufficiently impregnated with bonding material to provide a tensile-force-transmitting continuum of said bonding material between the front surface of said mother's-bond area of said topsheet and the front surface of underlying portions of said backsheet so that said sheets are united whereby the strength property of said portions of said backsheet lamina is added to the strength of said impregnated zone of said topsheet, and to effect sufficient interfiber bonding in said zone that said zone has sufficient strength to enable said first end of said tape fastener to be and remain operatively secured thereto during normal use of said bib.

4,523,335

SURGICAL GOWN

George W. Scrivens, Arlington, Tex., assignor to Surgikos, Inc., Arlington, Tex.

Filed Sep. 15, 1983, Ser. No. 532,348
Int. Cl.³ A41B *13/10*; A41H *33/00*
U.S. Cl. 2—51 **2 Claims**



1. A surgical gown comprising a main sheet and sleeves integrally attached thereto, said main sheet having a closed front portion and an open back portion, said back portion being folded along longitudinal fold lines extending the length of said gown to form folds laying along the side edges of the gown, said gown being fan folded along transverse fold lines from the bottom of the gown toward the top of the gown to form a series of overlapping folds, the sleeves of said gown being folded over the main body of the gown between the lowermost fold of said gown and the fold adjacent the lowermost fold, the gown then being folded along the longitudinal fold lines to form a compactly folded gown presenting the interior surface of the gown to the wearer.

4,523,336

METHOD FOR MANUFACTURE OF SLEEVED GARMENTS OUTSIDE OUT

Charles L. Truman, Hendersonville, N.C., assignor to Kimberly-Clark Corporation, Neenah, Wis.

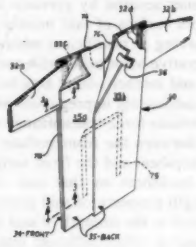
Filed Sep. 7, 1982, Ser. No. 415,659
Int. Cl.³ A41D *13/00*
U.S. Cl. 2—69 **5 Claims**

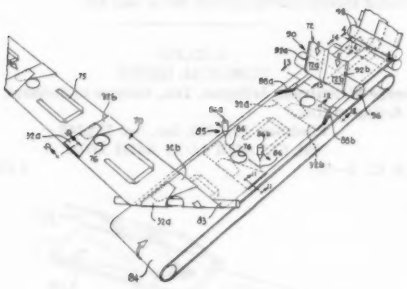
1. A method for the series manufacture of garments outside out comprising the steps of:

providing a moving, lengthwise continuous first fabric web having, at successive intervals, sets of left and right pairs of flattened tubular sleeves extending transversely in-

wardly from the lateral edges of said first web, said sleeves having one layer of each flattened sleeve attached at the arm hole portion to one surface of said web;

folding lateral edge portions of said moving first web inwardly on itself, including a strip of the arm hole end of each sleeve adhered thereto, on the other surface of said first web to provide inwardly folded edge portions of said first web and longitudinally contiguous strips of said sleeves adjacent the lateral edges of said first web;





attaching said inwardly folded portions of said moving first web and said longitudinally contiguous strips of said sleeve to a moving lengthwise continuous second fabric web to provide side seams joining said webs and said sleeves;

attaching said first and second webs along transverse lines adjacent said sets of sleeves to provide shoulder seams at successive intervals; and

cutting said moving continuous webs transversely successively adjacent said shoulder seams to provide finished garments.

4,523,337

CONTOURED APPAREL

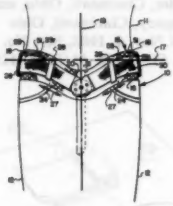
Martin N. Leibowitz, 1155 Hillsboro Mile, Ste. 602, Hillsboro Beach, Fla. 33062

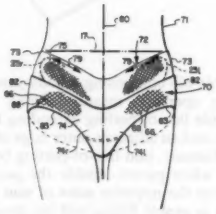
Filed May 2, 1983, Ser. No. 490,586

Int. Cl.³ A41F 9/02

U.S. Cl. 2—237 **8 Claims**

1. A garment constructed to cover at least a lower portion of the human torso, said garment including means forming a waistband having opposed side portions extending in an upward curvature over the wearer's iliums when worn and generally downwardly across the wearer's lower front abdominal wall to a generally central depression situated below the wearer's waistline, and said opposed side portions also extending generally downwardly across the wearer's back toward a generally central depression situated below the wearer's waistline and above the coccyx, said opposed side portions being secured to each other at said central depressions, respectively, and said side portions being formed so as to have at least a first layer of woven fabric wherein the warp and fill threads are directed so as to intersect opposed converging lines of force exerted by said waistband which extend from the top edges of respective ones of the wearer's iliums generally downwardly at an acute angle and converging toward the longitudinal vertical





centerline of said torso at said respective central depressions, said means forming said waistband being adapted to exert stretch and recovery forces along said converging lines whereby said garment is retained on said torso in supportive relationship thereto by said forces acting solely along said converging lines on said waistband.

4,523,338

DEMOUNTABLE JOINT

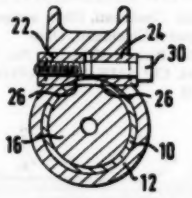
Denis R. W. May, London, England, assignor to J. E. Hanger & Company Limited, London, England

Continuation-in-part of Ser. No. 386,454, Jun. 8, 1982, abandoned. This application Jan. 31, 1983, Ser. No. 462,244

Claims priority, application United Kingdom, Jun. 9, 1981, 8117573; Jun. 9, 1981, 8117574

Int. Cl.³ A61F 1/08

U.S. Cl. 3—21 **4 Claims**



1. A demountable joint comprising a socket having a blind main bore, a tubular member of soft metal one end of which is inserted into said main bore, an auxiliary bore in the socket directed perpendicular to the axis of said main bore and intersecting it over a small arc, first and second collets which each fit in said auxiliary bore and have at their respective inner ends part cylindrical bearing faces conforming to the curvature of said tubular member, clamping bolt means for urging said first

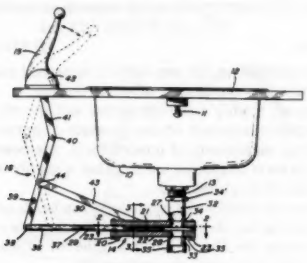
and second collets together so that they press on said tubular member and functionally retain said tubular member in said socket, and a reinforcing insert that is a push fit in said tubular member and has a flange that butts against the end of said main bore and seats on the end of said tubular member that is within the socket to locate said reinforcing insert axially in said tubular member so that it registers with said collets to resist compressive loads on said tubular member.

4,523,339

SINK DRAIN VALVE

Gérard Lavoie, 467 Principale St., Ville Dègelés, Quebec, Canada (G0L 1H0)

Filed Jun. 24, 1983, Ser. No. 507,485
Int. Cl.³ E03C *1/00*
U.S. Cl. 4—191 **1 Claim**



1. The combination of a liquid-containing basin having a downwardly-extending outlet tube, of the vertical portion of a lower drain pipe, said vertical portion co-axial with and vertically spaced from said outlet tube, with a closing mechanism controlling the flow of liquid from said basin between said outlet tube and said vertical drain pipe portion; said mechanism including top and bottom plates, each having a transverse small hole and removably secured one to the other in face-to-face relation, a gasket installed between the peripheral edge portions of said plates and defining an inner chamber in conjunction with said plates, said plate holes being in register and opening into said chamber; top and bottom drain nipples fixedly and permanently secured to said top and bottom plates, respectively, in registry with said plate holes and in co-axial arrangement, the outer ends of said top and bottom drain nipples being removably secured co-axially to said outlet tube and to said vertical drain pipe portion, respectively; a gate valve plate movable in said chamber transversely of said plate holes, a rod secured to said valve plate, co-planar therewith and protruding from one end of said top and bottom plates; an operating handle pivotally mounted adjacent said basin, and a multi-lever arrangement operatively interconnecting said handle to said rod, whereby operation of said handle will move said valve plate within said chamber between a position across said plate holes and a position clearing said plate holes.

4,523,340

MEANS PROVIDING MOVING WATER STREAM EJECTING INTO SPA TANK

Jonathan Watkins, San Marcos, Calif., assignor to Watkins Manufacturing Co., Carlsbad, Calif.

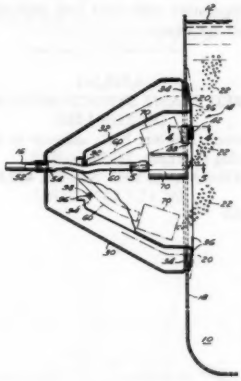
Filed Dec. 20, 1982, Ser. No. 451,030
Int. Cl.³ A67H *33/02*
U.S. Cl. 4—542 **17 Claims**

1. The improvement in a spa or the like that includes a tank containing water for body immersion and a flexible exhaust tube directed to exhaust water into said tank from a side thereof and a source of pressurized water connected to said exhaust tube, said exhaust tube having a free end adapted to whip by reaction to water exhausting therefrom and guide means guiding said exhaust tube to swing substantially in a single vertical plane, the improvement, comprising:

(a) a nozzle secured to said free end of said exhaust tube and an air line secured to said nozzle and extending generally parallel to said exhaust tube,

(b) said nozzle being formed by a larger rigid tube and end plugs for said larger tube, a smaller tube extending through said larger tube and openings in said plugs to pass said smaller tube, the free end of said exhaust tube being secured to said smaller tube, said air line connecting to said larger rigid tube at a location alongside said smaller tube and said smaller tube having side ports whereby the inside of said larger tube forms a floatation chamber receiving air from said air tube and exhausting air from said chamber in a Venturi manner through said ports into the water stream passing through said smaller tube during exhaust of pressurized water through said exhaust tube,

(c) housing means for said tube including opposite sidewalls forming said guide means for said tube,



(d) said tube having a fixed portion secured to said housing means with said free end extending inwardly therefrom towards the inside of said tank and means forming a pair of upper and lower abutments above and below said tube and spaced from said fixed portion of said tube in a direction toward the inside of said tank and said abutments forming bend points in undulating reversal movement of said tube at each end of the path of travel of said tube,

(e) said abutments being formed by a pair of rollers,

(f) said housing means including an outer housing for said tube to which said tube is secured with said free end extending inwardly therefrom towards the inside of said tank and an inner housing inside of said outer housing having opposite sidewalls forming said guide means for said tube, and

(g) said housings being mounted for relative vertical adjustment therebetween to adjust for the path of travel of said free end of said tube.

4,523,341

BATHING CABINET WITH TRANSPORTER CART

Carl J. Queen, 8408 Kelso Dr., Lake Park, Fla. 33410

Filed Dec. 12, 1983, Ser. No. 560,381
Int. Cl.³ A47K *3/022*
U.S. Cl. 4—555 **5 Claims**

1. A bathing system comprising:

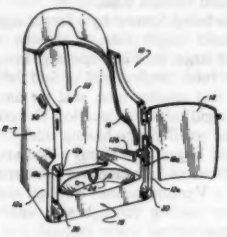
a bathing enclosure;

a patient transporter cart;

means for rolling said cart connected to said cart; said cart and means for rolling being positionable inside said enclosure;

means disposed in said bathing enclosure for providing a fluid spray inside said enclosure;

said bathing enclosure including means for shielding said



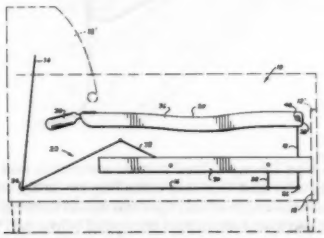
cart rolling means from fluids sprayed inside said enclosure by said means for providing a fluid spray during a bathing operation with said cart and means for rolling inside said enclosure.

4,523,342

FOLDING BED FRAME STRUCTURE FOR SOFA BEDS OR THE LIKE

Homer F. Poovey, Newton, N.C., assignor to Hickory Springs Manufacturing Company, Hickory, N.C.

Filed May 9, 1983, Ser. No. 492,898
Int. Cl.³ A47C *23/02*
U.S. Cl. 5—250 **9 Claims**



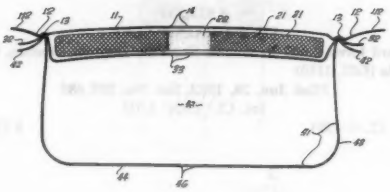
1. A folding bed frame structure for sofa beds or the like comprising a plurality of bed sections pivotally connected in end-to-end relation and linkage means adapted for affixation to a sofa frame or the like and operably associated with said bed sections for supporting said bed sections on said frame and controlling relative movement thereof in a predetermined pattern between a retracted position in which said bed sections are folded within said frame relative to one another with one said bed section disposed uppermost in horizontal disposition for user seating thereon and an extended position in which said bed sections are horizontally aligned for user sleeping thereon, non-sinuous link fabric means extending along and across each said bed section except said one bed section for providing firm resilient sleeping support in said extended position, said one bed section having two cross-members extending transversely thereof and fixed thereto at each longitudinal end thereof to be movable with said one bed section, and sinuous spring fabric means affixed to each said cross-member to extend longitudinally therebetween and across said one bed section for providing firm resilient seating support in said retracted position and firm resilient sleeping support in said extended position, said sinuous spring fabric means being curved in its extent longitudinally and outwardly of said one bed section to be generally convex in said retracted position for enhanced firmness and strength of seating support.

4,523,343

BUOYANT FIBER PRODUCT USED IN IMPROVED WATERBED FLOAT WITH HANGING BAFFLE

Richard Fraige, 11005 Hwy. 50 East, Carson City, Nev. 89701

Continuation-in-part of Ser. No. 337,122, Jan. 5, 1982, Pat. No. 4,481,248. This application Sep. 26, 1983, Ser. No. 535,619
Int. Cl.³ A47C *27/08*
U.S. Cl. 5—450 **20 Claims**



1. In combination, for use within a waterbed mattress or the like to reduce wave motion of water therein:

a bouyant, readily water-permeable and therefore heat-convection-transparent fibrous product comprising:

a large multiplicity of noncelliform, interbonded fibers in the form of a lofted matting that is readily water-permeable throughout, and

a large multiplicity of expanded foam beads secured to and among the fibers, and spaced apart singly or in clusters among the fibers to maintain the lofted matting readily water-permeable throughout;

a sheeting structure that forms a baffle for use in reducing such wave motion; and

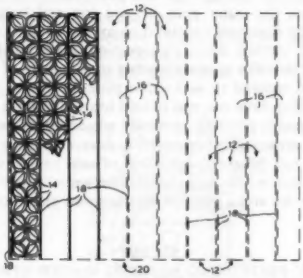
means for constraining the fibrous product in close proximity to the baffle, so that the fibrous product can by its buoyancy support the baffle.

4,523,344

INDEPENDENT BLOCK ASSEMBLY OF SPRINGS

Walter Stumpf, and Paul Dillon, both of Dunwoody, Ga., assignors to Simmons U.S.A. Corporation, Atlanta, Ga.

Filed Sep. 17, 1982, Ser. No. 419,369
Int. Cl.³ A47C *27/09*
U.S. Cl. 5—477 **8 Claims**



1. A flexible spring assembly comprising a plurality of interconnected parallel blocks having respective top and bottom surfaces, each of said blocks including first and second substantially parallel strips of interconnected pocketed coil springs, said strips each being defined by a plurality of coil springs encased between plies of a fabric strip, said plies being attached to each other between each coil spring to define individual compartments for each spring, said strips being connected to each other so as to form a non-nested arrangement of said pocketed springs, and a flexible cover wrapped about and

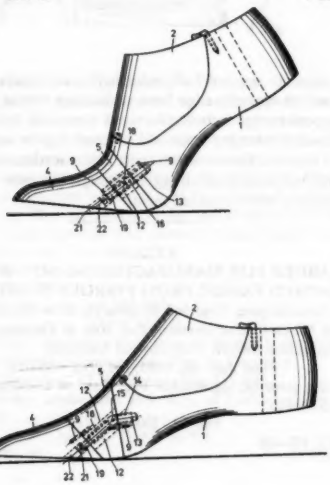
tightly encasing said connected strips; said blocks being hingedly attached to each other by longitudinal lines of connection connecting adjacent flexible covers to each other, said lines of connection being in a plane substantially perpendicular to the axes of each of said coil springs of an adjacent block; there being no connections between said blocks other than said longitudinal lines of connection.

4,523,345

LAST WITH A REPLACEABLE TIP

Fernando Orea Mateo, Madrid, Spain, assignor to Ingenieria del Calzado, S.A. (I.C.A.S.A.), Madrid, Spain

Filed Oct. 7, 1983, Ser. No. 539,957
Claims priority, application Spain, Oct. 7, 1982, 267.684
Int. Cl.³ A43D *3/02, 3/00*
U.S. Cl. 12—133 R **8 Claims**



1. In a last structure of the type including a main body portion provided with an unmolding block, and a plurality of toe portions selectively joinable to said main body portion, the improvement of means for adjusting the last structure to various heel heights of shoes to be formed thereon, said adjusting means comprising:

a plurality of interchangeable intermediate members adapted to be selectively connected between said main body portion and a selected said toe portion;

each said intermediate member having a rear surface to abut a complementary shaped forward surface of said main body portion and a forward surface to abut a complementary shaped rear surface of said selected toe portion;

said rear and forward surfaces of each said intermediate member extending at a relative orientation different from that of other said intermediate members, whereby connection of respective said intermediate members between said main body portion and said selected toe portion will result in corresponding changes of the orientation of said main body portion with respect to said selected toe portion; and

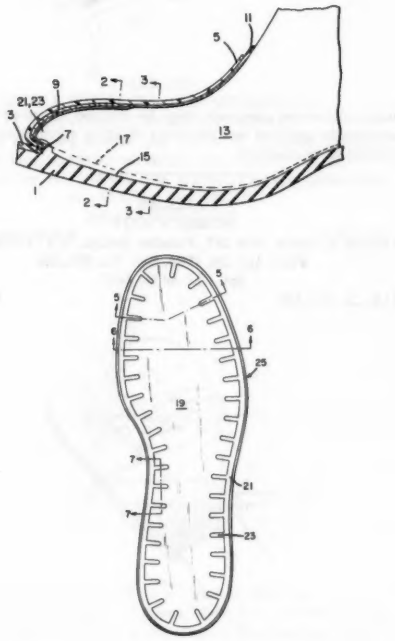
means for connecting a respective said intermediate member between said main body portion and said selected toe portion, said connecting means being adjustable to said changes of orientation to accommodate and be employable with all of said intermediate members.

4,523,346

METHOD AND DEVICE FOR THE MANUFACTURE OF FOOTWEAR

Horace Auberry; Anton Liebscher, and Sven Oberg, all of Waynesville, N.C., assignors to Ro-Search, Incorporated (Ro-Search), Waynesville, N.C.

Filed Aug. 11, 1983, Ser. No. 522,333
Int. Cl.³ A43D *3/00, 65/02, 65/00*
U.S. Cl. 12—133 R **20 Claims**



1. A method for making footwear with elastomeric soles lasted without a structural insole, comprising:

(a) providing an upper with a welt stitched thereto,

(b) providing a last with grooves on the last bottom substantially tracking said stitches,

(c) placing said last within said upper with said grooves closely adjacent said stitches; and

(d) forming a sole secured to said upper which includes said groove and the region between said grooves and said stitches.

4,523,347

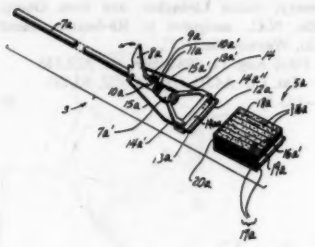
DISPOSABLE FLOOR MOP

Esther R. Tames, 1279 E. 17th St., Brooklyn, N.Y. 11230

Filed Nov. 14, 1983, Ser. No. 550,878
Int. Cl.³ A47L *13/20*
U.S. Cl. 15—104.94 **10 Claims**

1. A floor wetable-type mop device of disposable nature, consisting essentially of, in combination: at least two flexible first and second water-absorbent materials separated by a flexible third water-impervious material, one of said first and second water-absorbent materials including thereon a water-miscible cleansing agent, and the remaining one of the first and second water-absorbent materials being free of any water-miscible cleansing agent, said first and second water absorbent materials and said third water-impervious material being

adapted for mounting on a mop handle to dangle therefrom such that optionally alternate ones of said first and second



water-absorbent materials may be utilized in mopping for alternately applying and removing cleaning agent from a floor surface to be mopped.

4,523,348

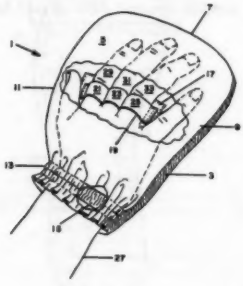
NURSE'S MITT

Colleen Y. Petrie, Box 267, Palatine Bridge, N.Y. 13428

Filed Apr. 30, 1984, Ser. No. 605,224

Int. Cl.³ A47K *7/02*

U.S. Cl. 15—227 **1 Claim**



1. A nurse's mitt of cloth-like material for washing purposes, said nurse's mitt comprising a palm portion, a back portion, a wrist portion having first elastic means, said palm portion having second elastic means, said palm and back portions being similarly configured, said palm and back portions having common tops and sides, said palm and back portions being joined together at their respective common tops and sides, said wrist portion having said first elastic means for retention of said nurse's mitt on the wrist of a human operator, said palm portion having an interior mid portion, said second elastic means being suitably affixed to said interior mid portion to define finger loops for insertion in and retention by said finger loops of the proximal phalanges of the index, middle and ring fingers of the human operator's hand.

4,523,349

CRAB MEAT EXTRACTOR AND METHOD OF EXTRACTION

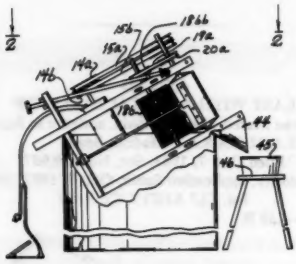
Wiley W. Warren, Rte. 4, Box 571, Washington, N.C. 27889

Filed Aug. 23, 1983, Ser. No. 525,742

Int. Cl.³ A22C *29/02*

U.S. Cl. 17—46 **25 Claims**

22. A method of extracting whole meat from crab undershell severed into severed half-undershells, comprising in combination: (1) removing a crab's outer upper-shell to leave an undershell; (2) thereafter, causing opposing pincher rolls positioned to form a forward elongated bite extending forwardly downwardly along an inclined line of contact between the opposing pincher rolls such that extracted meat is caused to move downwardly in a direction of a forward feed-location while meatless residual crab severed half-undershell is dragged through the rolls and is directed in a rearward direction away from said feed-location; (3) causing the rolls to revolve in a direction to form said forward elongated bite; (4) halving the undershell to



form separate severed half-undershells each having a severed edge and an opposite edge from which legs extend; (5) feeding the opposite edge into the forward elongated bite such that crab meat is extruded from said severed edge in said direction of said forward feed-location apart from meatless residual crab severed half-undershell dragged through the rolls; (6) thereafter steaming said extracted meat.

4,523,350

CARDER FOR MANUFACTURING NON-WOVEN, FORMED FABRIC FROM FIBROUS SUBSTANCES

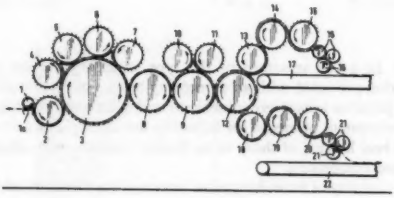
Hans Schmiedgen; Siegfried Bernhardt; Otto Strobl, and Dietrich Menzel, all of Bremen, Fed. Rep. of Germany, assignors to Spinnbau GmbH, Fed. Rep. of Germany

Filed Jun. 28, 1983, Ser. No. 508,876

Claims priority, application Fed. Rep. of Germany, Jun. 29, 1982, 3224118

Int. Cl.³ D01G *15/40*

U.S. Cl. 19—98 **5 Claims**

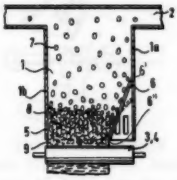


1. In an improved carder for fleece manufacture from fibrous material comprising at least one draw-in roller, a licker-in roller running oppositely to said draw-in roller, at least one master roller, and including worker roller means and clearer roller means cooperating therewith, the improvement wherein each master roller is followed by a fleece matting means, each fleece matting means comprising a matting roller means running in the same direction as the associated said master roller, said matting roller means producing a fleece drawing between 1 and 2 times compared to the associated said master roller a fleece draw-in depression cooperatively formed with said draw-in roller, whereby a fleece drawing of from about 100 and 200 times is provided between said draw-in roller and said licker-in roller with said licker-in roller running in the same direction; and a fleece drawing of from about 1 to 2 times exists between said licker-in roller and said associated master roller.

4,523,351
FIBER LAP PRODUCING APPARATUS WITH LAP WIDTH VARYING DEVICE

Ferdinand Leifeld, Kempen, Fed. Rep. of Germany, assignor to Trützschler GmbH & Co. KG, Monchen-Gladbach, Fed. Rep. of Germany

Filed Dec. 16, 1982, Ser. No. 450,421
Claims priority, application Fed. Rep. of Germany, Dec. 17, 1981, 3149965
Int. Cl.³ D01G *15/40*
U.S. Cl. 19—105 16 Claims

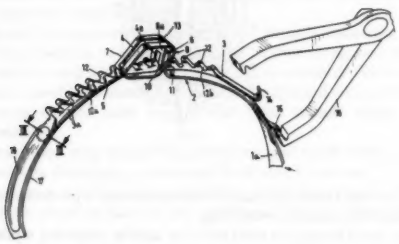


1. In an apparatus for producing a fiber lap, including a generally vertically oriented feed chute having a width, means for introducing fiber tufts into said feed chute at an upper portion thereof; and means for discharging a continuous fiber lap of predetermined width at a lower portion of said feed chute; the improvement comprising a movable wall element for varying an effective width of said feed chute for altering the width of the fiber lap produced by said apparatus; at least one portion of said movable wall element being situated at said lower portion of said feed chute.

4,523,352
HOSE CLIP

Gerhard Wachter, Büdingen, Fed. Rep. of Germany, assignor to Rasmussen GmbH, Maintal, Fed. Rep. of Germany

Filed Sep. 13, 1983, Ser. No. 531,929
Claims priority, application Fed. Rep. of Germany, Sep. 24, 1982, 3235329
Int. Cl.³ B65D *63/02*
U.S. Cl. 24—20 TT 13 Claims

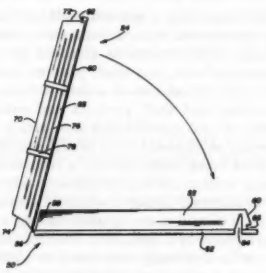


1. An annular hose clip, comprising an elongated flexible band having an inner side arranged to surround a portion of an elastically deformable component, a first end section and a second end section, said first end section having an end portion, a slot and an outwardly looped intermediate portion integral with said end portion and defining a substantially radially outwardly extending back support in the region of said end portion and said slot, said second end section extending through said slot and having detent means engaged by said end portion and urging the latter against said back support in response to the tendency of the surrounded component to expand the band when the latter is tightly applied therearound, said end portion of said first end section extending substantially radially inwardly toward said detent means and said back support having a substantially radially extending exposed surface abutting against said end portion when the latter engages with and is urged by the detent means against said back support.

4,523,353
SMALL ICE PACKS AND METHOD OF MANUFACTURING THE SAME

Vance M. Hubbard, Euless, and Welton K. Brunson, Bedford, both of Tex., assignors to Tecnol, Inc., Fort Worth, Tex.

Division of Ser. No. 184,466, Sep. 5, 1980,. This application Aug. 16, 1982, Ser. No. 408,638
Int. Cl.³ B65D *63/00*
U.S. Cl. 24—30.5 R 2 Claims



1. A closure member for an ice pack comprising:

a substantially planar elongate blade-like member having inwardly tapered end surfaces and a rib extending substantially the length thereof along the base, one of said tapered end surfaces having a notch formed internally thereof and having a cut formed in the base thereof proximate said notched end surface such that said end surface is flexible inwardly of the blade member;

a sheath member, dimensioned to receive the blade member, having two substantially parallel sidewalls connected by a roof portion, said sidewalls having a plurality of longitudinal ribs extending the length thereof and integral therewith, said sidewalls having open, outwardly tapered end surfaces dimensioned to conform substantially to the end surfaces of said blade-like member, the length of said sheath member being slightly less than said blade-like member;

a flexible member connecting one end surface of said sheath member to the unnotched end surface of said blade-like member, said hinge dimensioned to permit said blade-like member to be selectively moved into and out of registration with said sheath member; and

said sheath member having a flange disposed along the base thereof extending outwardly of said end surfaces and dimensioned to engage said notched end surface of said blade-like member such that the notched end surface of said blade-like member is compressed inwardly of the blade member when said blade member is forced into said sheath member to lock said blade-like member into registration with said sheath member.

4,523,354

CLIP FOR SHEET MATERIAL

Tatuzo Tsukamoto, 2570, Ohaza Mukaizima, Chiyodamachi, Kanzakigun, Saga 842, Japan

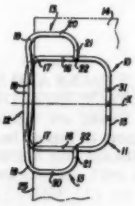
PCT No. PCT/JP82/00249, § 371 Date Feb. 28, 1983, § 102(e) Date Feb. 28, 1983, PCT Pub. No. WO83/00119, PCT Pub. Date Jan. 20, 1983

PCT Filed Jun. 28, 1982, Ser. No. 486,287

Claims priority, application Japan, Jul. 1, 1981, 56-103674; Mar. 25, 1982, 57-48233

Int. Cl.³ B42F *1/02*; A44B *21/00*

U.S. Cl. 24—67.9 **18 Claims**



1. A clip comprising a generally planar back unit which is generally symmetrical about a symmetrical axis, said back unit having a pair of shaft portions disposed on opposite sides of said symmetrical axis, said shaft portions each being spaced from said symmetrical axis at a first distance, crossing arms extending from said shaft portions and extending generally transversely of said symmetrical axis, and a pair of pressing units disposed on opposite sides of said symmetrical axis, said pressing units being connected to a respective crossing arm, said pressing units extending on opposite sides of said symmetrical axis to a second distance which is greater than said first distance, each of said pressing units having a terminating end section juxtaposed to a respective intermediate section of said shaft portion, said pressing units being movable relative to said back unit from a relaxed state to an open position such that in said open position a space is provided between said back unit and said pressing units for disposing sheets therebetween, said pressing units being movable to said open position by the torsional twist of said shaft portions, said terminating end sections engaging and contacting said sheets when said pressing units are in said open position such that said sheets are thereby clipped and retained between said pressing units and said back unit.

4,523,355

FITTING FOR JOINING AN ELONGATE BODY TO A SUPPORT

Aristheu A. Rosa, Boncava, Brazil, assignor to Preformed Line Products Company, Cleveland, Ohio

PCT No. PCT/BR82/00017, § 371 Date Jun. 14, 1983, § 102(e) Date Jun. 14, 1983, PCT Pub. No. WO83/01869, PCT Pub. Date May 26, 1983

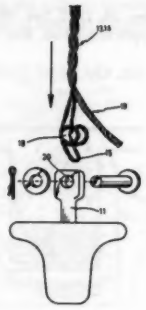
PCT Filed Nov. 11, 1982, Ser. No. 514,806

Claims priority, application Brazil, Nov. 11, 1981, 8107318

Int. Cl.³ F16G *11/12*

U.S. Cl. 24—115 N **1 Claim**

1. Apparatus for coupling an elongate body to a support comprising: a generally U-shaped fitting having a midportion extending transversely between two substantially parallel legs, said fitting having a central portion inwardly of the extremities of said legs which includes said midportion, said fitting being bent to form a pair of coaxial rings disposed one at either end of said midportion and extending generally at 90° to the plane containing said legs, said midportion being of generally planar curved configuration and lying in a plane inclined to the plane containing said legs, said fitting being formed of a plurality of resilient strands twisted together, said strands in said central portion having a greater degree of twist than the extremities of said legs so as to have a rope-like appearance, said strands in the extremities of said legs being twisted together in an open helical configuration with the helix on one leg being axially out of phase with the helix on the other leg by approximately



one-half their pitch, and the extremities of said legs being grippingly twinable around an elongate body to define the sole means for attaching the elongate body to the fitting and thereby coupling the elongate body to a support to which the fitting is attachable by said rings.

4,523,356

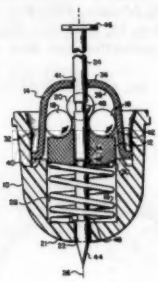
BALL CLUTCH MECHANISM WITH TWO SETS OF BALLS IN SEPARATE RADIAL PLANES

Lincoln H. Charlot, Jr., Tampa, Fla., assignor to Security Tag Systems, Inc., St. Petersburg, Fla.

Filed Feb. 27, 1984, Ser. No. 584,121

Int. Cl.³ A44B *9/00*; G08B *13/00*

U.S. Cl. 24—155 BR **18 Claims**



1. A ball clutch mechanism for restraining a pin from longitudinal movement, comprising

an anvil having an axial bore for axially receiving a pin;

a radially symmetrical cup having a confining end, a tapered interior wall and a predominantly open end covering the anvil and axially aligned with the anvil for axially receiving a said pin that is axially received by the bore of the anvil, wherein the anvil is longitudinally movable along its bore axis with respect to the cup;

biasing mean for forcing the anvil toward the confining end of the cup;

a first set of a given number of uniformly dimensioned balls in the cup, engaging the anvil and forced by the anvil toward the confining end of the cup when the anvil is forced toward the confining end of the cup by the biasing means; and

a second set of the given number of uniformly dimensioned balls in the extreme confining end of the cup for clutching

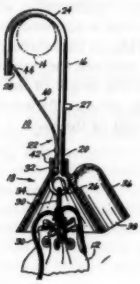
a said pin axially received by the cup and the bore of the anvil, wherein the interior wall of the cup is dimensioned and tapered with respect to the balls to cause the balls of the first and second sets to be in different radial planes and to cause the balls of the second set to contact the pin and wherein when the balls of the first set are forced toward the confining end of the cup, the balls of the first set wedge the balls of the second set between the tapered interior wall of the cup and the pin and uniformly space the balls of the second set to apply symmetrical radial pressure against said pin to firmly clutch the pin and thereby restrain said pin from longitudinal movement.

4,523,357

HOOK ASSEMBLY

H. Robert Widditsch, 3233 NE. 105th, Seattle, Wash. 98125

Filed Sep. 15, 1983, Ser. No. 532,541
Int. Cl.³ A43C *11/08*; A01K *39/00*
U.S. Cl. 24—230.5 R **10 Claims**



1. A hook assembly for attaching a container, line or other object to a support member, said hook assembly comprising:

a hood having an arcuate upper end section and an elongate shank section extending downwardly from said arcuate upper end section;

a hood having a central opening for slidably receiving said shank section to enable said hood to slide along said shank section, said hood being open in the downwardly direction;

upper hood stop means for limiting the upward sliding movement of said hood toward said hook arcuate upper end section;

lower hood stop means for preventing said hood from downwardly disengaging from said hook shank section;

connecting means for connecting the lower end portion of said hook shank section to the container, line or other object; and,

wherein said hood includes:

a central collar having an inside opening of a width slightly larger than the width of said hook shank section;

a skirt flaring outwardly from said central collar in the downward direction,

said skirt extending longitudinally downward beyond said hook shank section when said hood is restrained by said lower hood stop means; and,

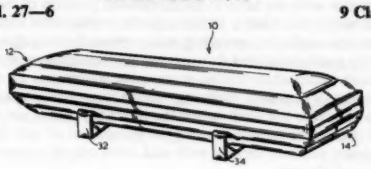
a socket member extending along said hood skirt, said socket having an opening in the direction opposite said hook curved end section for receiving the end of a pole, stick or similar member thereby to slide said hood upwardly along said shank section to abut against said upper stop means to enable said hook assembly to be lifted upwardly and to be engaged with a remotely located support member.

4,523,358

STAMPED CASKET

William J. Semon, Dalton, Pa., assignor to Casket Shells, Inc., Eynon, Pa.

Filed Feb. 23, 1983, Ser. No. 468,899
Int. Cl.³ A61G *17/00*
U.S. Cl. 27—6 **9 Claims**



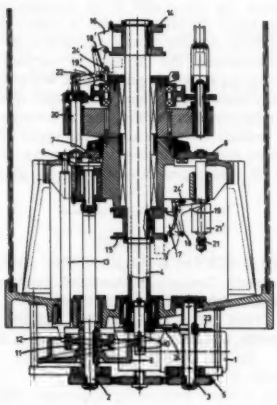
1. A casket comprising a one-piece pre-formed generally rectangular stamped body to be used as a base having an integrally formed bottom, sides and ends, and a one-piece preformed stamped cap having an integrally formed top, sides and ends to be used as a top, an integral generally horizontal flange extending inwardly from the periphery of the top and bottom sections in adjacent opposed relationship, hinges pivotally coupling the cap to the body and closing means for closing the cap to the body, said base and said cap being of substantially identical size and configuration and the cap being slightly larger in plan than the body to accommodate the hinges and closing means.

4,523,359

MACHINE WITH AN INTERMITTENTLY ROTATING TABLE FOR THE PREFORMANCE OF WORK OPERATIONS

Michelangelo Gippa, Chiasso, Switzerland, assignor to Azypatent AG, Vaduz, Liechtenstein

Filed Dec. 28, 1982, Ser. No. 454,081
Claims priority, application Switzerland, Dec. 28, 1981, 8302/81; Dec. 29, 1981, 8319/81
Int. Cl.³ B23B *9/12, 13/04*
U.S. Cl. 29—38 A **4 Claims**



1. A machine for performing work operations on workpieces, comprising a work table for supporting said workpieces, said table being rotatable about a vertical axis, means for intermittently rotating said table about said vertical axis, a plurality of operating units disposed peripherally about the table and mounted for movement toward and away from workpieces carried by the table, a central shaft lying on the

axis of rotation of the work table and movable both axially and rotatably relative to the work table, means responsive to axial movement of the shaft to move said operating units toward workpieces on the table, said responsive means comprising cams carried by the shaft and engageable with cam followers whose movement moves the operating units, indexing means engageable with the table to fix the rotated position of the table so that when the table is stationary, the workpieces will be in registration with the operating units, means for engaging said indexing means with and disengaging said indexing means from the work table whereby the work table undergoes its rotary movement when said indexing means are disengaged, and means to rotate the shaft when the indexing means are disengaged thereby to permit return axial movement of said shaft in the rotated position thereof with said cams out of contact with said cam followers.

4,523,360

PIECE-HOLDER TABLE REVOLVING INTERMITTENTLY IN MACHINE TOOLS

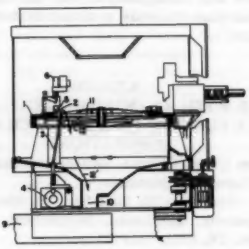
Massimo Giovanola, Lugano, Switzerland, assignor to Albe S.A., Agno, Switzerland

Filed Nov. 22, 1983, Ser. No. 554,342

Claims priority, application Switzerland, Jun. 7, 1983, 3109/83

Int. Cl.³ B23Q *11/00, 39/04*

U.S. Cl. 29—38 C **1 Claim**



1. In a machine tool having a multiplicity of work stations arranged about the periphery of an intermittently rotating work-holding table; the improvement in which the table comprises a peripheral circular crown, a central hub, a plurality of spokes interconnecting the crown and the hub and leaving spaces between the spokes, a plurality of work-holders on the crown radially outwardly of said spokes and spaces, and nozzles adjacent the periphery of the table so arranged as to direct jets of fluid radially inwardly across the upper surface of said crown to force material removed from work pieces radially inwardly to be discharged downwardly by gravity through said spaces.

4,523,361

PORTABLE SURFACE PROCESSING APPARATUS

Paul Dummermuth, Zunzgen, Switzerland, assignor to Von Arx A.G. Maschinenfabrik, Sissach, Switzerland

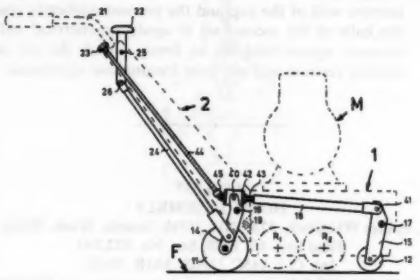
Filed Jul. 6, 1983, Ser. No. 511,389

Claims priority, application Switzerland, Jul. 6, 1982, 4108/82

Int. Cl.³ B23D *79/02*; B24B *7/18*

U.S. Cl. 29—81 J **4 Claims**

1. Portable surface processing apparatus with two rotor cages driven by a motor in opposite directions with horizontal axes, cage bars in the rotor cages, and a plurality of processing elements mounted on the cage bars, and having elevationally adjustable wheels in front and behind the rotor cages, characterized in that the two rotor cages (R_1, R_2) are turnably borne in a chassis (1) which is provided with wheels (11, 12) which are each arranged on the lower end of a two-armed swinging lever (14, 15), the upper ends of the swinging levers (14, 15) are connected by a connecting rod (18), and the two-armed swinging levers (14, 15) together with the connecting rod (18) and the connecting line of the swinging axes (16, 17) form an angle-adjustable parallelogram, in which the angle adjustment brings about a change of the relative height of the chassis (1) with respect to the surface (F) to be treated, said connecting rod (18) including a front connection (41) and a rear connection (40) which includes a sleeve (42), in which a screw pin (43) is



borne axially fixed but turnable, the screw pin (43) having a threaded part which is screwed into a female portion of the connecting rod (18), so that through rotation of the screw pin (43) the spacing between the connections (40, 41) is increased or decreased and the height of the chassis from the surface to be treated can be adjusted forward in the apparatus independently of the height of the back

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4,523,362

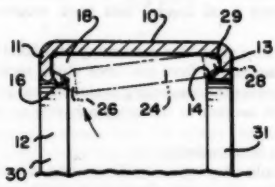
METHOD OF MAKING A ROLLER BEARING ASSEMBLY

Anthony Cuozzo, and John D. Achee, both of Torrington, Conn., assignors to The Torrington Company, Torrington, Conn.

Filed Sep. 1, 1983, Ser. No. 528,455

Int. Cl.³ B21D *53/12*

U.S. Cl. 29—148.4 A **4 Claims**



4. The method of making a roller bearing assembly comprising: shaping a small circumferential portion of a lip extending axially from a radially extending end flange of an outer race member into a roller end receiving portion to permit the passing of only are reduced end of a roller at a time into the annular trough defined by said end flange and said lip; filling the annular trough with reduced end rollers by passing the reduced ends of the rollers through the roller end receiving portion; and closing the roller end receiving portion to form a full complement bearing.

4,523,363

BUSH MOUNTING EQUIPMENT WITH LUBRICATING OIL APPLYING MECHANISM

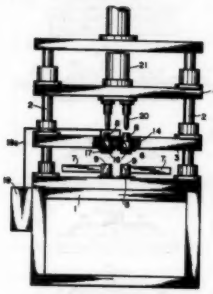
Shinichi Mizutani, and Harumi Ajiki, both of Toyota, Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Japan

Filed Feb. 15, 1983, Ser. No. 466,644

Claims priority, application Japan, Feb. 16, 1982, 57-020452[U]

Int. Cl.³ B23P *19/02*

U.S. Cl. 29—235 10 Claims



1. A bush mounting device with a lubricating oil applying mechanism, comprising:

a work holder for holding a workpiece, said work holder having a bush insertion hole with a diameter equal to the diameter of a bush mounting hole formed in said workpiece;

a guide holder having a tapered hole including a reduced-diameter portion, the diameter of said reduced-diameter portion being equal to that of said bush mounting hole of said workpiece, said guide holder being disposed in a position adjacent to said work holder so that said tapered hole is aligned with said bush insertion hole of said work holder; and

a lubricating oil feed gap formed in the circumference of a smaller-diameter end of said tapered hole.

4,523,364

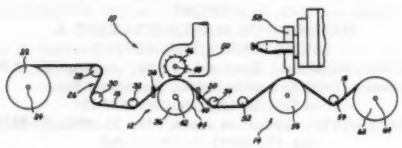
HIGH SPEED PRODUCTION OF MULTIPLE GAUGE STRIP

Harold H. Laws, East Alton, Ill.; Bart P. Caruso, Florissant, Mo., and James G. Hascall, Godfrey, Ill., assignors to Olin Corporation, New Haven, Conn.

Filed Jan. 5, 1983, Ser. No. 455,764

Int. Cl.³ B23P *13/02;* B23D *1/10*

U.S. Cl. 29—33 S 20 Claims



1. An apparatus for the high speed production of a multiple gauge metal strip product having a configuration with a transverse variable thickness, comprising:

milling means for cutting away at least about 75% of the total volume of metal to be removed from the surface of an initial strip of said metal to form a pattern corresponding to the multiple gauge surface desired in said strip product; and

means for shaving of a maximum of about 25% of the initial total volume of metal to be removed from the surface of milled strip in a single shaving pass to substantially form said desired configuration of the strip product, said shaving means located in axial alignment with said milling means whereby said strip exiting from said milling means passes directly into said shaving means.

4,523,365

METHOD OF MANUFACTURING BEARING BLOCKS

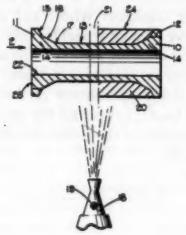
Anthony J. C. Richmond, Solihull, England, assignor to Lucas Industries public limited company, Birmingham, England

Filed Aug. 3, 1982, Ser. No. 404,866

Claims priority, application United Kingdom, Aug. 5, 1981, 8123921; Mar. 16, 1982, 8207634

Int. Cl.³ B21D *53/10*

U.S. Cl. 29—527.4 3 Claims



1. A method of manufacturing a bearing block for a gear pump, comprising forming an antifriction bush of a lead-bronze material having a lead content of between 27% and 37%, said bush having an outer surface which includes a cylindrical portion, an outwardly extending flange whose radial dimension is at least equal to that of the required block, and a fillet extending from said cylindrical portion to adjacent the periphery of said flange, electroplating a nickel layer on said outer surface and flame spraying light alloy over said nickel layer to build up said light alloy to the radial dimension of said flange.

4,523,366

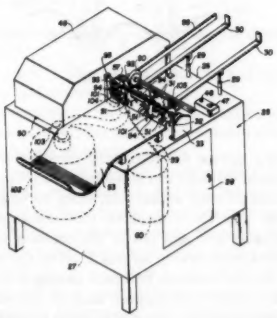
AUTOMATED PIPET PLUGGING MACHINE

Daniel A. Lodge, Bridgeton, and Donald D. Wheeler, Landisville, both of N.J., assignors to Meteor Manufacturing & Machinery Co., Vineland, N.J.

Filed Jan. 20, 1984, Ser. No. 572,525

Int. Cl.³ B23Q *7/00*

U.S. Cl. 29—564.6 17 Claims



1. A pipet plugging machine comprising a base, an intermittently driven rotational pipet transport shaft on the base, axially spaced coaxial pipet transport and locator wheels fixed on the transport shaft, a cotton roving transport wheel fixed on

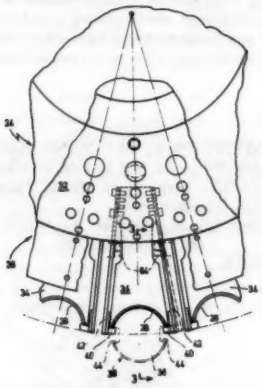
the transport shaft near one pipet locator wheel, inclined pipet delivery rails on the base extending from one side of the transport shaft at right angles thereto, a pipet collection apron on the base and extending from the opposite side of said transport shaft, a continuously driven rotational shaft on said base extending at right angles to the transport shaft and carrying a rotational cam element, said roving transport wheel having a peripheral roving groove, circumferentially spaced radial slots intersecting said groove, and a corresponding number of circumferentially spaced axial through openings between said slots intersecting said groove, a reciprocating horizontal axis needle device defining a pipet plugging station disposed coaxially of each through opening of the roving transport wheel when the latter is dwelling at the plugging station, scissor blades defining a cotton roving severing station disposed radially of the roving transport wheel and adapted to sever a roving in the groove of such wheel by entering each radial slot of such wheel at the severing station while such wheel is dwelling, and mechanism on said base actuated by said rotational cam element and being operatively connected to said needle device and scissor blades to operate the same in timed relationship with dwell periods of the intermittently driven rotational pipet transport shaft.

4,523,367

LOCKING DEVICE FOR TOOLS IN TOOL MAGAZINES

Fritz Burkhardt, Brunnenweilerstrasse 13, D-7332 Eislingen/-Fils, and Otto Antel, Freibadweg 16, D-7325 Bad Boll, both of Fed. Rep. of Germany

Filed Sep. 9, 1983, Ser. No. 530,795
Int. Cl.³ B23Q *3/157*
U.S. Cl. 29—568 **5 Claims**



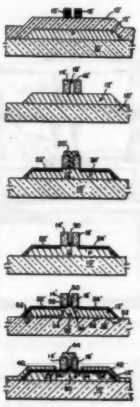
1. A locking device for releasably securing tools or tool holders provided on their circumference with opposed recesses, in tool pockets open at one side, along an edge of a rotatable magazine disc for a machine tool comprising locking members movable into and out of the recesses in pairs, leaf spring members each having an end fixed to the disc radially inwardly of the tool pockets and each having a free end radially outwardly of the tool pockets, each of the locking members being located on the free end of each of said leaf spring members, said leaf spring members arranged substantially tangentially with respect to the circumference of the tool or tool holder to be secured, and actuating means for deflecting said leaf spring members to engage and disengage said locking members.

4,523,368

SEMICONDUCTOR DEVICES AND MANUFACTURING METHODS

Wolfgang M. Feist, Burlington, Mass., assignor to Raytheon Company, Lexington, Mass.

Continuation of Ser. No. 126,787, Mar. 3, 1980,. This application Apr. 24, 1984, Ser. No. 602,280
Int. Cl.³ H01L *21/265*
U.S. Cl. 29—571 **5 Claims**



1. A method of forming a field effect device comprising the steps of:

(a) forming a pair of spaced insulating members on the surface of a semiconductor;

(b) forming a masking layer over a region of the surface of the semiconductor between the pair of spaced insulating members;

(c) introducing particles to establish source and drain contact regions through portions of the surface of the semiconductor exposed by the masking layer;

(d) removing the masking layer;

(e) forming a gate electrode over the region between the pair of spaced insulating members.

4,523,369

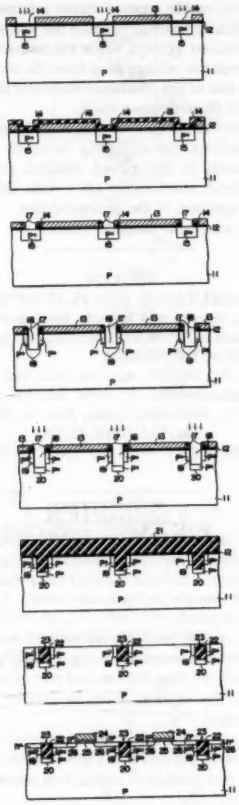
METHOD FOR MANUFACTURING A SEMICONDUCTOR DEVICE

Yoshihide Nagakubo, Kawasaki, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Sep. 24, 1982, Ser. No. 423,107
Claims priority, application Japan, Mar. 31, 1982, 57-53530
Int. Cl.³ H01L *21/76, 21/265*
U.S. Cl. 29—576 W **7 Claims**

1. A method for manufacturing a semiconductor device comprising the steps of (a) forming a first mask member which has an opening to expose a desired portion of a major surface of a semiconductor substrate; (b) ion-implanting an impurity of the same conductivity type as that of said semiconductor substrate through said opening of said first mask member to form an impurity region of a high concentration in a surface layer of said semiconductor substrate; (c) substantially forming a second mask member only on a side surface of said opening of said first mask member while said first mask member is left as it is; (d) forming a groove by selectively etching said semiconduc-

tor substrate by using said first and second mask members, while at the same time leaving the impurity region of the high



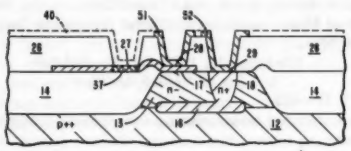
concentration at least on a side surface of said groove; and (e) burying an insulating isolation member in said groove.

4,523,370

PROCESS FOR FABRICATING A BIPOLAR TRANSISTOR WITH A THIN BASE AND AN ABRUPT BASE-COLLECTOR JUNCTION

Paul A. Sullivan, and George J. Collins, both of Fort Collins, Colo., assignors to NCR Corporation, Dayton, Ohio

Filed Dec. 5, 1983, Ser. No. 558,252
Int. Cl.³ H01L *21/322*
U.S. Cl. 29—576 B **8 Claims**



1. In a process for fabrication of an npn bipolar junction transistor wherein the transistor utilizes: p-type polysilicon deposited on a single crystal n-type collector region to form a base region, n^+ doped polysilicon deposited on a portion of the base to form an emitter, and n^+ doped polysilicon deposited on the collector to form a contact for the collector, the process comprising the steps of:

depositing a layer of polycrystalline or amorphous silicon onto the collector by low-pressure chemical vapor deposition at a temperature in the range of approximately 600° C. to 700° C. while in-situ doping the deposited silicon with boron atoms to lay down the base region;

thermal annealing the base region in an inert environment at temperature high enough to recrystallize the base region into single epitaxial crystal but low enough to avoid migration of dopants from the deposited polycrystalline or amorphous silicon layer into the collector;

forming a p^+ base contact region in the base region by implantation of boron ions;

depositing a subsequent layer of polysilicon in contact with the base contact region, the base region and the collector while doping the polysilicon with n^+ impurities;

etching the subsequent layer of n^+ doped polysilicon with a selective etchant to remove the subsequent layer of polysilicon from the p^+ base contact region and to separate the portions thereof in contact with the collector and base regions, so as to form the emitter, to expose the base contact and to form both the emitter and collector contact; and

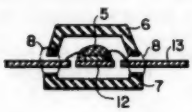
thermal annealing the subsequent layer of polysilicon to increase the number of active donors while simultaneously annealing the p^+ base contact region.

4,523,371

METHOD OF FABRICATING A RESIN MOLD TYPE SEMICONDUCTOR DEVICE

Yoshiaki Wakashima, 1-3-1, Hosoyama, Tama-ku, Kawasaki-shi, Kanagawa, Japan

Division of Ser. No. 162,089, Jun. 23, 1980, abandoned. This application Dec. 15, 1982, Ser. No. 449,874
Claims priority, application Japan, Aug. 1, 1979, 54-97286
Int. Cl.³ H01L *21/52, 21/56*
U.S. Cl. 29—588 **11 Claims**



1. A fabrication method of a semiconductor device comprising the steps of:

preparing a lead frame having a central pad and leads surrounding said central pad;

securing a semiconductor element on said central pad and electrically connecting said semiconductor element to said leads by means of metallic wires;

preparing molded upper and lower sealing articles of a thermoplastic resin material, said molded upper and lower sealing articles each having a bottom portion and a wall portion standing at the periphery of said bottom portion;

locating said molded upper and lower sealing articles opposite to each other in relation to said lead frame so as to interpose said lead frame therebetween and to cover said semiconductor element and said metallic wires;

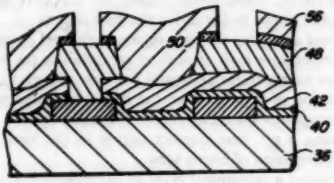
preheating said molded upper and lower sealing articles to a first temperature; and

sealing said molded upper and lower sealing articles by heating the resin material of said wall portions thereof to a second temperature higher than said first temperature.

4,523,372
PROCESS FOR FABRICATING SEMICONDUCTOR DEVICE

Raymond J. Balda; Yefim Bukhman, both of Tempe, and Willis R. Goodner, Chandler, all of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed May 7, 1984, Ser. No. 607,868
Int. Cl.[3] H01L *21/312*
U.S. Cl. 29—590 13 Claims

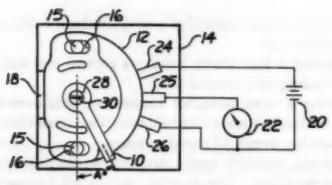


1. A process for fabricating a semiconductor device which comprises the steps of: providing a semiconductor substrate having a first layer of organic material thereon; providing a second layer of first metallization overlying said substrate; forming a third layer of a first insulating material overlying said second layer of first metallization; patterning said third layer; patterning said second layer of first metallization, leaving said third layer overlying remaining portions of said second layer; forming a fourth layer of organic material overlying said third layer; forming a fifth layer of said first insulating material overlying said fourth layer of organic material; forming openings in said fifth layer to expose portions of said fourth layer of organic material; reactive ion etching said fourth layer of organic material through said openings in said fifth layer to expose portions of said third layer; and simultaneously etching said fifth layer and portions of said third layer exposed through said fourth layer of organic material to expose portions of said second layer first metallization.

4,523,373
METHOD OF ASSEMBLING AN ACTUATING LEVER TO A POTENTIOMETER

Bertice E. Walker, Jr., Williamsburg, and Richard J. Hyder, Newport News, both of Va., assignors to Allied Corporation, Morristown, N.J.

Filed Jul. 19, 1982, Ser. No. 399,539
Int. Cl.[3] G05G *1/00*
U.S. Cl. 29—593 1 Claim



1. A method of assembling an actuating lever to the moveable contact means of a potentiometer, having at least one mounting aperture, to establish a known voltage ratio between the position of the moveable contact means and one end of the resistance track in the potentiometer, said method comprising the steps of:

locating the potentiometer in a fixed position relative to the at least one mounting aperture thereof;

electrically coupling a known, regulated power source across the resistance track in the potentiometer and an electric voltmeter between the moveable contact means and the one end of the resistance track in the potentiometer;

moving the moveable contact means intermediate the ends of the resistance track to position the voltmeter reading at a predetermined voltage value representing an effective ratio between the voltage drop from the moveable contact to the one end of the resistance track and the total voltage drop across the resistance track;

holding the moveable contact means in the moved position;

securely attaching the actuating lever to the moveable contact means in the moved position at an accurately predetermined relationship (A°) with the at least one mounting aperture of the potentiometer;

releasing the moveable contact means.

4,523,374
COMMUTATOR FOR FLAT MOTOR

Mitsuo Sawabe, Narita, and Kouichi Imai, Kawasaki, both of Japan, assignors to Nihon Radiotor Co., Ltd. and Toho Tekko Co., Ltd., both of Tokyo, Japan

Division of Ser. No. 368,501, Apr. 14, 1982, Pat. No. 4,453,102.
This application Feb. 27, 1984, Ser. No. 583,774
Claims priority, application Japan, Apr. 14, 1981, 56-55134
Int. Cl.[3] H01R *43/08*
U.S. Cl. 29—597 4 Claims

1. Process for manufacturing a commutator for a flat motor comprising the steps of:

punching out a central part of a hat-shaped member made of superior conductive material having a flange part at a lower portion thereof, bending the top end part of said hat-shaped member inwardly so as to form an annular projection of inverted U-shape;

making slits in a specified spaced apart relation in said annular projection from its top end down to a surface of the flange so as to form an odd number of connection pieces separated by the slits, respectively;

while keeping both the bottom surface of the flange in said connection piece and said annular projection exposed, burying the bent leading end of said annular projection in a molding in an annular form with insulation resin material which insulates said slits and overlies said flange;

cutting the flange part of the molded components in a radial form in a specified spaced apart relation in response to said slots so as to form some radial slits as well as to make a plurality of fan-shaped divided contact pieces; and

forming some wire connection slits at the top ends of said connection pieces.

4,523,375
METHOD OF MANUFACTURE FOR A MAGNETIC TACHOMETER FOR DISK DRIVES

Patrick L. Hearn, Acton, and Edward Courtney, Jr., Pepperell, both of Mass., assignors to Digital Equipment Corp., Maynard, Mass.

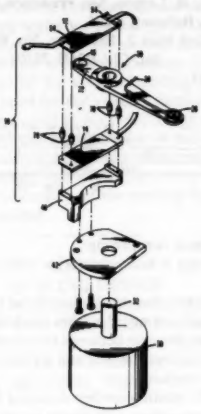
Filed Jun. 16, 1983, Ser. No. 505,048
Int. Cl.[3] H01F *41/10*
U.S. Cl. 29—605 6 Claims

1. A method of manufacturing a tachometer comprising the steps of:

providing a unitary non-magnetic insert having first and second portions separated by a central breakable region;

placing a first and second armature member on, respectively, said first and second portions; and

simultaneously winding an insulated electrical wire over said first and second portions and the respective first and second armature member to form first and second coil assembly.

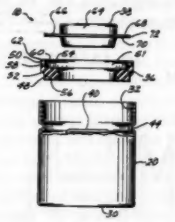


4,523,376

METHOD FOR SEALING A RECHARGABLE CELL

William C. Thibault, Melrose, and Paul E. Pate, Branford, both of Fla., assignors to General Electric Company, Gainesville, Fla.

Filed Jun. 17, 1983, Ser. No. 505,159
Int. Cl.[3] H01M 6/00
U.S. Cl. 29—623.2 4 Claims



1. A method for sealing a rechargeable electrochemical cell having a hollow cylindrical container having a first and second end and comprised of a cylindrical axially and circumferentially extending wall portion having a radially inwardly facing sealing surface disposed thereon, said container further having a bottom portion formed integrally with said wall portion, said bottom portion closing said first end of said cylindrical container, said cell further having a spirally wound electrode assembly disposed within said container, said assembly comprised of a pair of electrode plates of opposite polartiy separated from each other by an electrolyte absorbant separator, said cell further having a cover assembly disposed in said container proximate said second end opposite said bottom portion, said method comprising the steps of:

providing said cylindrical container;

inserting said spirally wound electrode assembly into said cell container axially adjacent said bottom portion;

deforming said wall portion to form a stiffening rib in said wall portion, said rib extending radially toward and circumferentially about said axis and disposed axially adjacent said electrode assembly so that said electrode assembly is disposed in said container between said rib and said bottom portion;

inserting an annular seal member into said container axially immediate adjacent to said rib, said seal member comprised of an amorphous polymer and having a first circumferentially extending radially outwardly facing sealing surface disposed radially adjacent to and radially inwardly of said sealing surface on said wall portion, said seal member having a second circumferentially extending radially inwardly facing sealing surface coaxial with said first sealing surface on said seal member;

inserting said cell cover assembly into said container, said cover assembly having a circumferentially extending radially outwardly facing edge face, said cover assembly inserting step including the step of disposing said cover assembly into said container such that said edge face is disposed radially inwardly of and radially adjacent to said second sealing surface on said annular seal member;

applying a radially inwardly directed force to said wall portion adjacent said radially inwardly facing sealing surface on said wall portion so as to permanently reduce the diameter of said wall portion adjacent said sealing surface on said wall portion and radially compress said annular seal member between said radially inwardly facing sealing surface on said wall and said radially outwardly facing edge face on said cover member; and

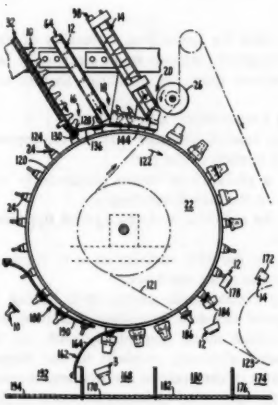
reducing the radially outward spring back of said wall portion by deforming said container wall portion at said second end of said container toward said cover assembly to provide a lip projecting radially inwardly, said springback reducing step occuring contemporaneously with said force applying step.

4,523,377

BABY BOTTLE CAP ASSEMBLER

Barry Spletzer, Lansing; George J. Swiatlowski, and Maurice W. Brandt, both of Fremont, all of Mich., assignors to Gerber Products Company, Fremont, Mich.

Filed Nov. 22, 1983, Ser. No. 554,426
Int. Cl.[3] B23P 21/00, 19/00
U.S. Cl. 29—773 23 Claims



1. A baby bottle cap component assembler for use in assembling a baby bottle cap of the type including a nipple, a collar sized to fit over the nipple, and a hood mounted to the collar and adapted to fit over an end of the nipple extending through the collar, the assembler comprising:

a plurality of pickup pins sized for insertion into the hollow interior of the nipples;

a pickup pin carrier for movement of said pick-up pins along a pickup pin path;

means for driving said pickup pin carrier;

feed means for serially supplying nipples, collars and hoods to respective nipple, collar and hood pickup points near said pickup pin path, said collar pickup point being downstream of said nipple pickup point and said hood pickup point being downstream of said collar pickup point;

said nipple, collar and hood pickup points positioned and said feed means arranged and adapted so as said pickup pin carrier is driven by said driving means, one said pickup pin engages the interior of a nipple at said nipple pickup point and strips the nipple from said nipple feed means, the nipple carried by said pickup pin engages the interior of a collar at said collar pickup point and strips the collar from said collar feed means, and the nipple carried by said pickup pin engages the interior of a hood at said hood pickup point and strips the hood from said hood feed means so a nipple/collar/hood combination is carried by the pickup pin; and

means, located downstream from said hood pickup point, for locking said nipple/collar/hood combination together.

4,523,378

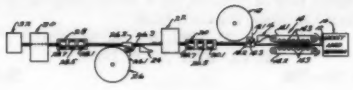
METHOD AND APPARATUS FOR ASSEMBLING ELECTRICAL CONTACT ELEMENTS IN AN ELECTRICALLY INSULATIVE BODY

Thomas E. Evans, Rehoboth, Mass., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Mar. 16, 1983, Ser. No. 475,778

Int. Cl.³ H01R *43/04*; B23P *23/00*

U.S. Cl. 29—881 **21 Claims**



1. A method for assembling a plurality of electrically conductive elongated elements in an electrically insulative body having element receiving apertures therein comprising the steps of

forming a track along a first path,

disposing spaced, movable surfaces on opposite sides of at least a portion of the path,

feeding a plurality of bodies sequentially onto the track between the movable surfaces,

biasing the movable surfaces against opposite sides of the bodies,

moving the movable surfaces so as to impart movement of the bodies along the track,

directing a continuous carrier strip having a plurality of elongated elements depending therefrom along a second path which meets tangentially with the first path, the elongated elements received in the element receiving apertures of the body as the first and second paths meet,

biasing the elongated elements disposed in the element receiving apertures so that they are fully seated in the aperture,

staking the body contiguous to each elongated element to secure said element to the body and

severing the elongated elements from the carrier strip,

motion being transferred to the carrier strip from the movable surfaces through the bodies and elongated elements assembled therein prior to severing of the elongated elements from the carrier strip.

4,523,379

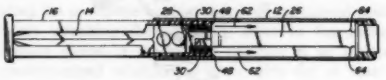
KNIFE WITH RETRACTABLE SHEATH

Ralph F. Osterhout, San Francisco; John D. Burr, Redwood City, and Eric R. Larson, San Francisco, all of Calif., assignors to Tekna, Belmont, Calif.

Filed May 2, 1984, Ser. No. 606,317

Int. Cl.³ B26B *29/02*

U.S. Cl. 30—151 **19 Claims**



1. An implement comprising:

a handle having a hollow interior with an opening at one end;

a tool fixedly attached to the handle at the opening;

a sheath slidably mounted within the hollow interior of the handle to reciprocate between an extended position where said sheath covers the tool and a retracted position where the tool is exposed;

a compressible elastic member disposed between the sheath and the tool so that said elastic member is relaxed when the sheath is fully retracted and compressed when the sheath is extended; and

means for releasably securing the sheath in its fully extended position, whereby when the sheath is released, the elastic member will extend and impel the sheath into the interior of the handle.

4,523,380

MEASURING APPARATUS

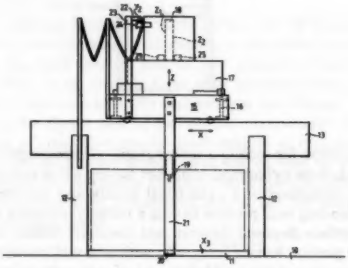
David A. Wright, 11 Carnethy Ave., Edinburgh, Scotland

Continuation-in-part of Ser. No. 249,953, Apr. 1, 1981, which is a continuation-in-part of Ser. No. 104,850, Dec. 18, 1979, abandoned. This application Aug. 19, 1983, Ser. No. 524,670

Claims priority, application United Kingdom, Dec. 27, 1978, 50002/78

Int. Cl.³ G01B *11/03*

U.S. Cl. 33—1 M **2 Claims**



1. Apparatus for determining the volume of an object comprising a platform upon which the object whose volume is to be measured rests; a first pair of horizontal rails mounted above the platform, a first carriage or frame mounted to horizontally move in a first x-axis direction on said horizontal rails, a second set of spaced rails horizontally mounted on said first carriage with the longitudinal axis of the second set of rails normal to the first pair of horizontal rails, a second carriage mounted to move horizontally in a second y-axis direction on said second set of spaced rails, a measuring probe, a vertically mounted probe support member mounted on the second carriage, means mounting the measuring probe for vertical movement in a third z-axis direction to the support member, three measuring scales

x_1, x_2, and x_3 on the x-axis, scales x_1 and x_2 secured to faces of the first rails, co-operating reading heads carried on the first carriage, scale x_3 carried on the platform, a reading head for scale x_3 supported from the first carriage for movement therewith, three measuring scales y_1, y_2 and y_3 for the y-axis, scales y_1 and y_3 secured to faces of the second rails, co-operating reading heads carried on the second carriage for scales y_1 and y_3, the y_2 scale carried by a bar extending across the first carriage, a reading head for the y_2 scale carried on the second carriage, two scales z_1 and z_2 provided for the z-axis, said z_1 and z_2 scales carried on opposite sides of the probe support, two reading heads carried on the second carriage co-operating with the z_1 and z_2 scales, and circuit means for each x-, y- and z-axis to combine the outputs of the reading heads to provide a single corrected output.

4,523,381

SCALING DEVICE

Akihisa Narimatsu, and Hiroyuki Ohkubo, both of Tokyo, Japan, assignors to Sony Magnescale Incorporation, Tokyo, Japan

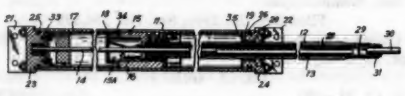
Filed Oct. 15, 1982, Ser. No. 434,576

Claims priority, application Japan, Oct. 15, 1981, 56-152247[U]

The portion of the term of this patent subsequent to Nov. 27, 2001, has been disclaimed.

Int. Cl.³ G01B 7/02

U.S. Cl. 33—125 C **10 Claims**



1. Scaling device comprising a first cylinder having first and second ends and an inner diameter; end cover means disposed in said first end of said first cylinder to close off the same; a longitudinal scale having detectable indicia thereon and affixed on said end cover means to be axially fixed relative to said first cylinder and disposed coaxial therewithin, the longitudinal scale having a predetermined radial extent; a second cylinder having an inside diameter greater than the radial extent of said scale and an outside diameter less than the inner diameter of said first cylinder, the second cylinder being disposed coaxially with said first cylinder and said scale; sealing fitting means disposed in said second end of said first cylinder and journalling said second cylinder for axial longitudinal movement thereof with respect to said first cylinder, said second cylinder extending through said fitting means within said first cylinder and over said scale; and scale detector means disposed to move with said second cylinder to detect said indicia on said scale and to generate scale signals in response to longitudinal relative displacement of said first and second cylinders.

4,523,382

WORK-CONTACT PROBE HEAD FOR COORDINATE-MEASURING INSTRUMENTS

Walter Werner, Konigsbronn; Klaus Herzog, Oberkochen, and Franz Szenger, Konigsbronn, all of Fed. Rep. of Germany, assignors to Carl-Zeiss-Stiftung, Heidenheim, Fed. Rep. of Germany

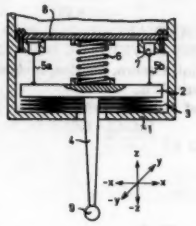
Filed Mar. 31, 1983, Ser. No. 480,822

Claims priority, application Fed. Rep. of Germany, Apr. 29, 1982, 3215878

Int. Cl.³ G01B 7/02

U.S. Cl. 33—169 R **20 Claims**

1. A probe head for use in making work-contacting coordinate measurements, comprising a cylindrical housing having an opening at one end and a base-reference member within said housing and spaced from and facing said open end, an elongate probe element having a work-contacting end and a circular base plate at its other end, said base plate being received with clearance in the housing with the work-contacting end of said probe projecting outwardly beyond said open end, at least three substantially parallel flexible tension wires fixed at one end at equal angular spacing with respect to said base-reference member and fixed at the other end at equal angular spacing with respect to said base plate, yieldable loading means



continuously reacting axially between said base-reference member and said base plate and placing said wires in tension, and torsion-resistant axially compliant means establishing a probe-centering connection between said housing and said base plate, whereby in the absence of work contact, said probe extends and is displaceable in one direction (Z) relative to said base-reference member and can be tilted in all directions away from said one direction.

4,523,383

POSITION SENSING APPARATUS

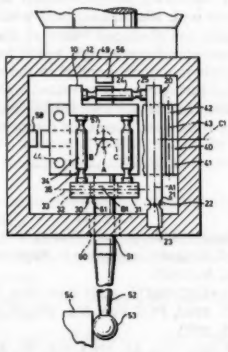
Michael J. Rogers, San Jose, Calif., and David R. McMurtry, Wotton-under-Edge, England, assignors to Renishaw Electrical Limited, Wotton-under-Edge, England

Filed Jul. 27, 1983, Ser. No. 517,627

Claims priority, application United Kingdom, Jul. 28, 1982, 8221820

Int. Cl.³ G01B 7/28

U.S. Cl. 33—558 **8 Claims**



1. Apparatus for sensing the position of an object comprising a fixed member;

a moveable member including a stylus;

three support units connected to said fixed and moveable members in position therebetween and aligned to respective directions any one of which is at an angle to the other two, said support units cooperating to constrain said moveable member for three dimensional parallel movement relative to the fixed member; and

sensing means for sensing said movement;

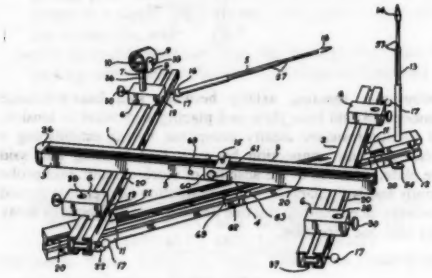
wherein the improvement resides in that said support units are each connected to said fixed and moveable members in positions therebetween to constitute parallel connections between the members; and each support unit comprises rigid means constraining the moveable member against rotation about the direction pertaining to the unit, and flexible means permitting said relative movement in said directions.

4,523,384

METHOD AND APPARATUS FOR MEASURING DEVIATIONS IN VEHICLE BODIES OR FRAMES

Gian F. Giacomini, Örebro, Sweden, assignor to Applied Power Inc., Milwaukee, Wis.

Filed Mar. 22, 1984, Ser. No. 592,250
Int. Cl.³ G01B 5/25
U.S. Cl. 33—180 AT **12 Claims**



3. A measuring frame for measuring deformations of vehicle frames or bodies characterized in that the measuring frame comprises: two transverse beams which at each end are provided with a gripping means which is adjustably attached in a groove on said beams so that these can be attached prependicularly to the longitudinal axis of the vehicle at four reference points; a longitudinal center beam which can be coupled to said transverse beams so that an H-shaped measuring frame is formed; and a measuring beam attached adjustably on the transverse beams with attachments, and which can be pushed and locked under the H-shaped frame so that the measuring beam can assume an arbitrary angle to the longitudinal direction of the vehicle in a plane parallel to the measuring frame, whereby the measuring beam is provided with a measuring tip for vertical measurement and a measuring rod is adapted to at least one of the transverse beams for direct or cross measurement.

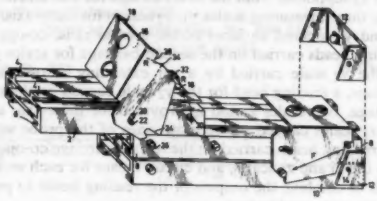
4,523,385

LATCH

Allan F. Robinson, Sydney, and Warwick A. Hunter, Grose Wold, both of Australia, assignors to Napintas Pty. Ltd., New South Wales, Australia

PCT No. PCT/AU82/00173, § 371 Date Jun. 27, 1983, § 102(e) Date Jun. 27, 1983, PCT Pub. No. WO83/01493, PCT Pub. Date Apr. 28, 1983
PCT Filed Oct. 26, 1982, Ser. No. 514,830
Claims priority, application Australia, Oct. 26, 1981, PF1306
Int. Cl.³ G01C 15/00
U.S. Cl. 33—296 **30 Claims**

1. A latch of the over centre type adapted to mutually lock first and second interengaged, axially slidable members in an axially overlapping disposition by utilizing a first pivot axis on the first member and a second parallel pivot axis on the second member, characterised in that the latch straddles the two members, a pair of pin and slot connections connects the latch to the first member at the first pivot axis, fulcrum means is adapted for engagement with the latch at a second axis in the second member, and the latch extends from the zone of the two axes like a lever whereby the latch is tiltable between a release position wherein the members are slidable and a locked position where the distance between the two axes changes and in doing so locks the members together, and a latch arrester holds the latch closed.

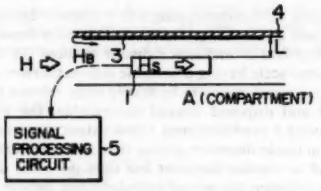


4,523,386

HEADING DETECTING APPARATUS

Muneaki Matsumoto, Okazaki; Akira Kuno, Oobu, and Koji Numata, Toyokawa, all of Japan, assignors to Nippon Soken, Inc., Nishio, Japan

Filed Dec. 24, 1981, Ser. No. 334,378
Claims priority, application Japan, Dec. 26, 1980, 55-186268; Apr. 22, 1981, 56-61826
Int. Cl.³ G01C 17/38
U.S. Cl. 33—357 **11 Claims**



1. In a heading detecting apparatus for detecting the forward heading of a vehicle having a magnetic member extending generally parallel to the ground and being capable of having a remanence, the improvement in said apparatus comprising the combination of:

a heading sensor for detecting the terrestrial magnetism and providing an output signal representing the direction thereof,

said sensor being adapted for disposition spacedly adjacent said magnetic member and therefore due to said remanence being subject to error in detecting said direction accurately;

means for magnetically shielding said heading sensor from said magnetic member including a permeability member disposed adjacent said sensor for disposition between and parallel to said magnetic member and said heading sensor for causing a portion of said remanence to pass through said permeability member thereby reducing the amount of said remanence which passes through said heading sensor so that said heading sensor more accurately detects the terrestrial magnetism direction; and

signal processing means connected to receive said output signal for developing there from an accurate indication of the heading direction of said vehicle.

4,523,387

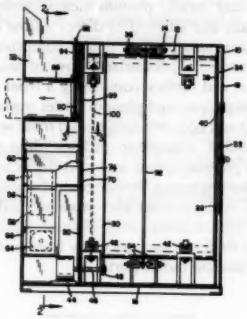
MICROWAVE TREATING MECHANISM

Douglas P. Mahan, 4300 SW. 188th Ave., Aloha, Oreg. 97007

Filed Dec. 8, 1983, Ser. No. 559,497

Int. Cl.³ F26B *23/08*

U.S. Cl. 34—1 **5 Claims**



1. Microwave treating mechanism for removing moisture from articles comprising

a housing including front and rear walls,

a hollow tumbler-type microwave opaque drum having front and rear ends and also having an inner cavity arranged to receive articles from which moisture is to be removed,

said housing and drum having an opening for loading and unloading articles,

support means supporting said drum on substantially a horizontal axis,

drive means arranged to rotate said drum whereby articles being treated tumble laterally across the interior of said drum,

microwave power means disposed with the output thereof directed axially through said drum into said cavity for engaging articles tumbling laterally across said rotating drum for removing moisture therefrom,

a microwave energy insulating layer on the inner surface of said cavity arranged to allow reflection of microwave energy waves from said opaque drum but reducing arcing of said energy waves between metal objects tumbling in said cavity and said opaque drum,

an electric circuit for said power means,

and control means in said circuit for said power means.

4,523,388

METHOD FOR DRYING BY VAPOR RECOMPRESSION

Jacques Cuel, Paris, France, assignor to Beghin-Say S.A., Paris, France

PCT No. PCT/FR82/00119, § 371 Date Mar. 28, 1983, § 102(e) Date Mar. 28, 1983, PCT Pub. No. WO83/00547, PCT Pub. Date Feb. 17, 1983

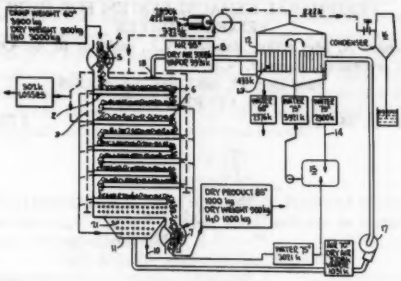
PCT Filed Jul. 16, 1982, Ser. No. 480,950

Claims priority, application France, Jul. 28, 1981, 81 14670

Int. Cl.³ F26B *3/20*

U.S. Cl. 34—35 **7 Claims**

1. A drying process for drying a damp material in a closed vertical dryer having upper and lower ends and having a plurality of horizontally and vertically spaced heating plates positioned therein comprising the steps of feeding a damp material into the upper end of said closed vertical dryer, causing said damp material to pass continuously over and in contact with one surface of said heating plates in order that said damp material proceeds through said dryer to an exit point at the lower end of said vertical dryer, simultaneously feeding into the said lower end of said vertical dryer a mixture of dry air and water vapor under conditions which will provide saturated feed air at a temperature between 60° C. and 100° C.; removing from the upper end of said vertical dryer a mixture of dry air and water vapor at a temperature above the temperature of said saturated feed air; cooling said removed mixture to the temperature of said saturated feed air to provide saturated



air and water vapor separately, compressing said vapor to raise the temperature thereof to be above the temperature of said saturated air, and refeeding said saturated air to the bottom of said vertical dryer and said heated vapor to said heating plates to heat said plates.

4,523,389

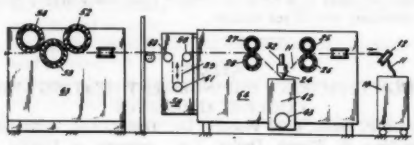
APPARATUS FOR DRYING TUBULAR KNITTED FABRIC

Edmund A. Diggle, Jr., Oradell, and John Krajcovic, Ridgefield Park, both of N.J., assignors to Samcoe Holding Corporation, Woodside, N.Y.

Division of Ser. No. 489,960, Apr. 29, 1983, Pat. No. 4,484,369. This application Sep. 10, 1984, Ser. No. 648,540

Int. Cl.³ F26B *13/08, 13/24*

U.S. Cl. 34—105 **3 Claims**



1. Apparatus for the processing of wet tubular knitted fabric, which comprises

(a) first stage internal spreader means for receiving wet-processed tubular knitted fabric and spreading it to flat form,

(b) means for controlling the speed of advance of the incoming wet fabric,

(c) a nozzle disposed transversely of the path of fabric movement and on the downstream side of said first stage spreader means,

(d) means to supply said nozzle with gaseous drying medium under pressure,

(e) said nozzle and said means to supply being so related as to provided for the discharge of drying medium from the nozzle at approximately sonic velocities,

(f) means for guiding the fabric around and in contact with said nozzle whereby said drying medium may be discharged through the fabric,

(g) said means for guiding including an exit side drive roll engaging the tubular knitted fabric across its width,

(h) controllable drive means for driving said first stage spreader and said exit side drive roll, whereby said fabric is elongated and maintained under tension between said first stage spreader and said exit side drive roll,

(i) second stage spreader means located downstream of said

exit side drive roll for laterally distending the fabric to predetermined width, and

(j) means for further processing said fabric.

4,523,390

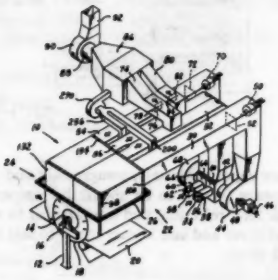
PERIPHERAL EXHAUST SYSTEM FOR HIGH VELOCITY DRYER

Richard A. McCarthy, Ramsey, N.J., assignor to Aer-Overly Corporation, Ramsey, N.J.

Filed Dec. 13, 1982, Ser. No. 449,545

Int. Cl.³ F26B *13/08*

U.S. Cl. 34—115 **3 Claims**



1. A dryer section for drying a web of material including in combination a recirculating drying air system comprising means for supplying heated drying air to an area of said web bounded by the effective periphery of said dryer section, means for removing moisture laden air from said area within said periphery, and means for balancing said supplying and removing means to provide an excess of air tending to flow outwardly of said periphery and means including duct means independent of said recirculating system for carrying said excess air away to a location remote from the working space surrounding said dryer section.

4,523,391

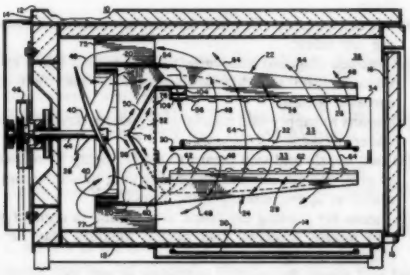
HIGH EFFICIENCY IMPINGEMENT HEATING AND COOLING APPARATUS

Donald P. Smith, 4530 Woodfin Dr., Dallas, Tex. 75220, and William W. Plumb, Dallas, Tex., assignors to Donald P. Smith, Dallas, Tex.

Filed Sep. 27, 1982, Ser. No. 424,595

Int. Cl.³ F26B *15/18*

U.S. Cl. 34—225 **9 Claims**



1. Apparatus for controlling the flow of a temperature-controlled gas to the surface of a food product, said apparatus comprising a cabinet; at least one thermal treatment zone disposed within said cabinet; means for supporting said food product within said thermal treatment zone; columnating means extending transversely across said thermal treatment zone adapted to receive a temperature-controlled gas and thereafter direct a plurality of columnated jets of said gas against a surface of said food product; duct means communicating with said columnating means adapted to receive said gas from a plenum means and thereafter discharge said gas into said columnating means; plenum means communicating with said duct means and adapted to direct a flow of said gas into said duct means, said plenum means comprising a back wall adapted to receive a pressurized flow of said gas into said plenum means, and further comprising a front wall, said front wall comprising elongated plenum outlet ports disposed adjacent to the top and bottom edges of said front wall, said plenum outlet ports being adapted to provide fluid communication between said plenum means and said duct means, said front wall of said plenum means further comprising upper and lower inclined front wall sections and proximal and distal side inclined front wall sections, said inclined front wall sections being adapted to direct said gas away from said back wall and through said plenum outlet ports.

4,523,392

INNER LINING FOR SPORTS FOOTWEAR HAVING A RIGID OR SEMI-RIGID SHELL STRUCTURE

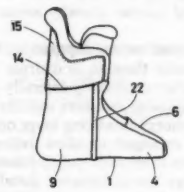
Andrea Gabrielli, Predazzo, Italy, assignor to Lange International S.A., Fribourg, Switzerland

Filed Jan. 26, 1983, Ser. No. 461,020

Claims priority, application Switzerland, Feb. 22, 1982, 1072/82

Int. Cl.³ A43B *19/00*

U.S. Cl. 36—10 **3 Claims**



1. An inner lining, for use in sports footwear of the type having a rigid or semi-rigid shell structure, said lining comprising an upper and a sole that are formed from a plurality of flexible panels assembled with one another, said sole including a heel portion and said upper comprising:

an inner liner having a front portion, a lower rear portion, and upper rear portion forming, along with said sole, a kind of slipper;

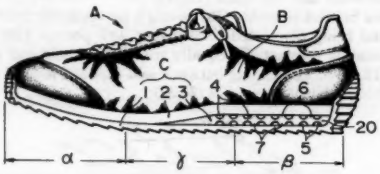
an outer liner disposed over the front portion of said inner liner to form a pair of lateral pockets extending on either side of said front portion, each pocket having a substantially vertical opening at the rear thereof; and

a sheathing covering the lower rear portion of the upper, the heel portion of said sole and lateral portions of the upper behind the front lateral pockets, the sheathing having an upper edge and being fastened permanently to said upper at said upper edge, said sheathing further having vertical edges and means for detachably securing said vertical edges to said outer liner for covering said vertical openings; wherein said sheathing and lateral pockets define a space adapted to receive a padding member extending from one pocket, behind the upper, and into the other pocket; and wherein such a one piece padding member may be detachably inserted under said sheathing and into said lateral pockets to be retained thereby.

4,523,393
SPORT SHOE SOLE

Masanobu Inohara, Akashi, Japan, assignor to Asics Corporation, Akashi, Japan

Division of Ser. No. 174,848, Aug. 4, 1980, Pat. No. 4,359,830, which is a division of Ser. No. 896,477, Apr. 14, 1978, Pat. No. 4,236,326. This application Apr. 5, 1982, Ser. No. 365,144
The portion of the term of this patent subsequent to Dec. 2, 1997, has been disclaimed.
Int. Cl.³ A43B *13/20, 21/28*
U.S. Cl. 36—29 4 Claims

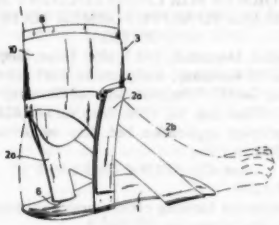


1. A sole for use with sport shoes comprising a rigid abrasion-resistant ground sole, the ground sole having a heel portion, an arch portion, and a toe portion, a resilient and elastic interlayer body bonded to said ground sole, and a resilient and elastic interlayer sole bonded to said interlayer body, said interlayer body being extended over and bonded to the heel portion and the shoe arch portion of the ground sole and having uniform thickness at the heel portion and decreasing into a wedge shape toward the top of the shoe arch portion, the interlayer body being provided with a plurality of parallel grooves on the surface of said interlayer body which extend transversely all the way from one side to the other side and are open to the air at the side wall of the interlayer body, the cross section of each groove being semicircular.

4,523,394
ANKLE LIGAMENT PROTECTIVE DEVICE

Kjell E. Lindh, Kardvägen 13, S-752 57 Uppsala, and Kjell H. Sundin, Vårtiden 6, S-791 32 Falun, both of Sweden

PCT No. PCT/SE81/00332, § 371 Date Jun. 30, 1982, § 102(e) Date Jun. 30, 1982, PCT Pub. No. WO82/01659, PCT Pub. Date May 27, 1982
PCT Filed Nov. 11, 1981, Ser. No. 394,925
Claims priority, application Sweden, Nov. 12, 1980, 8007953
Int. Cl.³ A43B *7/20*
U.S. Cl. 36—89 9 Claims



1. An ankle ligament protective device adapted for use in an with a shoe, comprising:

a foot plate adapted to be placed under a foot and extending from the heel portion to and under the arch of the foot, the shoe, when worn, forming means for securing the foot plate to the foot;

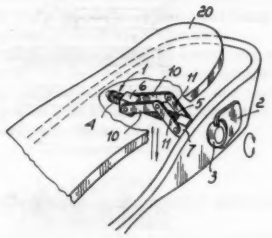
an ankle sleeve having fastening means for attachment of the sleeve around and over the ankle portion of the lower leg, particularly above the prominence areas of the ankle; and,

flexible, lengthwise non-extensible connecting members attaching the foot plate to the ankle sleeve, said members extending on each side of the ankle sleeve from a single point of attachment over a prominence area of the ankle to at least a rear part of the foot plate, the connecting members permitting foot movements through a normally full range of non-injurious positions, but preventing excessive sideways movements into positions likely to cause ligament injury, whereby said ankle ligament protective device can be worn with normal shoes which need not be specially adapted for use with said device.

4,523,395
ADJUSTING DEVICE PARTICULARLY FOR SKI BOOTS

Bruno Borsoi, Conegliano Veneto, Italy, assignor to Nordica S.p.A., Montebelluna, Italy

Filed Aug. 16, 1982, Ser. No. 408,539
Claims priority, application Italy, Aug. 31, 1981, 22770/81[U]
Int. Cl.³ A43B *5/04*
U.S. Cl. 36—119 4 Claims



1. An adjusting device for ski boots comprising:

a bar carried rotatably on a ski boot and operable from outside said ski boot;

a cap rigidly connected to one end of said bar externally to said ski boot;

a gripping element being articulated to said cap for hand rotating said bar about its own axis;

said bar having first and second oppositely threaded portions;

a first and second block having in the inside thereof a threaded though hole having a thread matching the portion of said bar, which they engage said first and second blocks travelling along said bar, in opposite direction;

said first and second blocks respectively engaging rotatably with said oppositely threaded portions during the rotation of said bar about its own axis;

a first pair of connecting rods arranged laterally to said bar;

a second pair of connecting rods arranged laterally to said bar in opposed positions with respect to said first pair, and located on said boot to the foot heel region;

each of said connecting rods having one end articulated to said blocks respectively;

an adjuster including the sole of said ski boot and engaging the other ends of said connecting rods;

said first and second pair of connecting rods being articulated to each other at the end engaging with said adjuster;

said first and second pair of connecting rods respectively lying in a plane perpendicular to said adjuster and substantially coincident with the plane coinciding with the sides of said first and second blocks;

said first and second blocks translating along said bar for moving said adjuster in a perpendicular direction to the axial direction of said bar by rotation of said bar about its own axis;

each of said connecting rods having a first portion, including said one end articulated to one of said blocks, which is

bent so as to be out-of-alignment with respect to the second portion including the other end of each of said connecting rods;

said connecting rods being arranged for rotating parallel plane with respect to the axis of said bar and said plane which is perpendicular to the axis of the articulations of said other ends of said connecting rods.

4,523,396

ATHLETIC SHOE HAVING SPIKE OR STUD-SHAPED CLEATS EXCHANGEABLY ARRANGED AT THE RUNNING SOLE

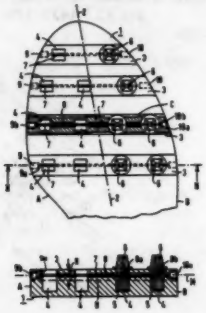
Armin A. Dassler, Herzogenaurach, Fed. Rep. of Germany, assignor to Puma-Sportschuhfabriken Rudolf Dassler KG, Fed. Rep. of Germany

Filed Aug. 16, 1983, Ser. No. 523,790

Claims priority, application Fed. Rep. of Germany, Sep. 2, 1982, 3232604

Int. Cl.³ A43B *5/00*; A43C *15/00*

U.S. Cl. 36—134 **17 Claims**



1. An athletic shoe having a running sole in which spike- or stud-shaped cleats are exchangeably mounted, said running sole having rows of openings and said cleats having base parts which are received in said rows of openings of the running sole, each row of cleats being fastened to the sole by means of a single holding means that is insertable and lockable on a side of the running sole, wherein the base parts of the cleats are fastened in the openings of the running sole in a manner so that they cannot be twisted about their longitudinal axis, and wherein base parts of the cleats have at least one borehole that is alignable with lateral boreholes in the running sole in each row of cleats for form a continuous borehole, a shaft being provided a a fastening means for each of said row of cleats, so that, by means of the insertion of a single said shaft into said continuous borehole, all of the cleats of a respective row of cleats is fastened jointly to said holding means, wherein said holding means is provided with a releasable locking means, and wherein the releasable locking means is a bayonet lock comprising the shaft, being provided, at one end, with a key-bit-shaped bend and, at its other end, being supported by a resilient element, and said borehole having a pocket-shaped enlargement, whereby said bend is engageable within the pocket-shaped enlargement of the borehole by means of an axial displacement of said shaft against the resilient element followed by a rotation of the shaft about its longitudinal axis.

4,523,397

HIGH STRENGTH BUCKET

Victor A. Lucas, Yorkville, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Jan. 27, 1984, Ser. No. 574,794

Int. Cl.³ E02F *3/70*

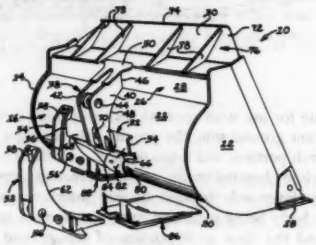
U.S. Cl. 37—118 R **9 Claims**

1. In an earthmoving bucket (10) having first and second end walls (12,14), a shell portion (16) defining a bottom wall portion (20) and a rear wall portion (22) and extending laterally between said end walls (12,14), and a cutting edge support (18) secured to a forward edge (24) of said bottom wall portion (20), the improvement comprising:

a first reinforcing beam assembly (26) having a body portion (28) and an outwardly extending plate portion (30), said beam (26) being connected to said rear wall portion (22) and extending between said end walls (12,14);

a second reinforcing beam assembly (32) having first and second ends (34,36) and being connected to said rear wall portion (22), spaced from and extending parallel to said first beam assembly (26), and spaced from and positioned between said end walls (12,14);

a first bracket assembly (38) having a pin receiving bore (44) and being connected to said rear wall portion (22) at a location substantially equally spaced from said end walls (12,14) and extending between said first and second reinforcing beam assemblies (26,32);



a second bracket assembly (52) having a pin connecting bore (56), a dump-stop portion (60), and a rack-back stop portion (58) and being connected to said rear wall portion (22) and to said first end (34) of said second reinforcing beam assembly (32); and

a third bracket assembly (54) having a pin connecting bore (56), a dump-stop portion (60), and a rack-back stop portion (58) and being connected to said rear wall portion (22) and to said second end (36) of said second reinforcing beam assembly (32), said second and third bracket assemblies (52,54) being spaced one from the other, extending beyond said second reinforcing beam assembly (32) and having an open pocket (64) defined by said second and third bracket assemblies (52,54), said second reinforcing beam assembly (32), and said rear wall portion (22), each of said second and third bracket assemblies (52,54) being of a unitary steel construction and being void of welds.

4,523,398

TRACK FORMER FOR CROSS COUNTRY SKI TRACKS WITH MEANS TO MOVE FORMER TO TRANSPORT POSITION

Horst Scheibel, Dornstadt, and Walter Haug, Blaustein, both of Fed. Rep. of Germany, assignors to Karl Kassbohrer Fahrzeugwerke GmbH, Ulm, Fed. Rep. of Germany

Filed Sep. 14, 1984, Ser. No. 650,628

Claims priority, application Fed. Rep. of Germany, Sep. 20, 1983, 3333942

Int. Cl.³ E01H *4/00*; E02F *3/12*

U.S. Cl. 37—220 **4 Claims**

1. Apparatus for forming cross country ski tracks in a snow covered surface, comprising:

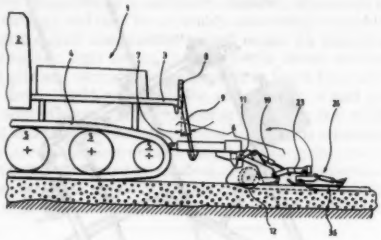
a trailer frame adapted to be connected to the rear end of a vehicle;

a lifting frame connected to said trailer frame for pivotal movement about a first horizontal axis, said lifting frame having a pair of parallel guide members extending longitudinally from said trailer frame to a transversally extending crossbar, said guide members being arranged symmetrically on opposite side of a central axis common to the lifting frame, the trailer frame, and the vehicle;

at least one cross country ski track forming device con-

nected to said crossbar, said track forming device being pivotably movable about a second horizontal axis; and

positioning means connected between said trailer frame and said lifting frame for pivotally manipulating said lifting frame about said first horizontal axis between an operative



position at which said track forming device extends rearwardly from said trailer frame to contact and impress tracks in the snow covered surface, and an inoperative position at which said track forming device is elevated from said surface and is folded over said trailer frame.

4,523,399

DISPLAY MOUNT APPARATUS AND METHOD

Carroll N. Cross, Rte. 2, Box 741, Maitland, Fla. 32751

Filed Dec. 20, 1983, Ser. No. 563,625

Int. Cl.³ G09D *3/00*

U.S. Cl. 40—119 **7 Claims**

1. A method of making a display mount comprising the steps of:

selecting a mounting board of predetermined width;

selecting a pad of sheet material for said mounting board having a predetermined width less than said mounting board;

positioning the selected pad of sheet material on the selected mounting board with at least one page of said pad of sheet material open;

binding said pad of sheet material to said mounting board with a polymer strip extending around said mounting board and around a portion of the pages of said pad of sheet material; and

folding each said open sheet over said polymer strip binding the remaining sheets to the mounting board.

4,523,400

PLASTIC BIASED POSTER FRAME

James R. Seely, Avon, Conn., assignor to Marketing Displays, Inc., Farmington Hills, Mich.

Continuation of Ser. No. 424,883, Sep. 27, 1982, abandoned. This application Mar. 23, 1984, Ser. No. 592,903

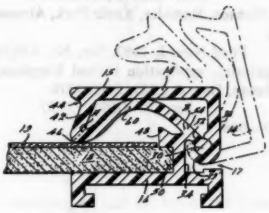
Int. Cl.³ A47G *1/06*

U.S. Cl. 40—156 **57 Claims**

1. A display holder having a plurality of elongated frame sections forming a polygonal frame structure for receiving and clamping a display piece in said display holder, the improvement comprising

each frame section having a base member, a moveable cover member, and resilient biasing means, said cover member having holding means for securing said display piece in place,

said biasing means integrally attached to both said base member and said cover member and connecting them together,



said base member, cover member and biasing means being made of an extruded plastic material and being integrally formed together at the time of extrusion,

said base member and cover member comprising a relatively rigid material and said biasing means comprising a relatively softer material and being elastic and resilient,

said biasing means providing a force holding said holding means against said display piece.

4,523,401

MULTI-CHANNEL TRANSPARENT MICROFILM JACKET

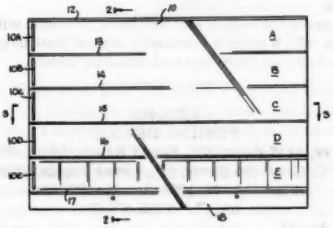
Isidore Dorman, Whitestone, N.Y., assignor to aNB Jackets de Puerto Rico, Caguas, P.R.

Continuation of Ser. No. 792,109, Apr. 29, 1977, Pat. No. 4,471,545, which is a continuation of Ser. No. 463,814, Apr. 24, 1974, abandoned. This application Jul. 9, 1984, Ser. No. 629,098

The portion of the term of this patent subsequent to Sep. 18, 2001, has been disclaimed.

Int. Cl.³ A47G *1/06*

U.S. Cl. 40—159 **4 Claims**



1. A multi-channel transparent jacket for accommodating microfilm strips having a predetermined thickness and a predetermined width and whose length is no greater than the length of the jacket, said jacket comprising:

(A) top and bottom rectangular panels in superposed relation formed of flexible, polyester film having predetermined polymeric properties; and

(B) a plurality of in situ ribs formed of moldable plastic material compatible with the material of said panels disposed along parallel lines between said panels and integrally bonded thereto to form a unitary structure free of adhesive or other bonding agents and in which the properties of said panels are unimpaired, said ribs maintaining

said panels in parallel planes to define open-end channels whose width is substantially equal to the width of said strips, said ribs having a thickness substantially equal to the thickness of said strips, each channel having an entry slot cut into said bottom panel adjacent the front end of the jacket.

4,523,402

SIGN CONSTRUCTION

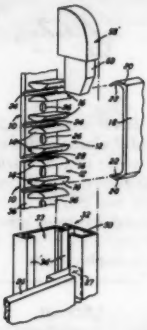
Charles E. Dobson, Rambles, Knole Park, Almondsbury, Bristol, England

Filed Nov. 2, 1982, Ser. No. 438,709

Claims priority, application United Kingdom, Nov. 9, 1981, 8133783; Japan, Dec. 4, 1981, 56-181370

Int. Cl.³ G09F *15/00*

U.S. Cl. 40—606 **5 Claims**



1. A sign construction comprising:

a plurality of elongated indicia-bearing generally rectangular plates arranged edge-to-edge;

a pair of mounting bars located at the ends of said plates and extending transversely to the length thereof;

means attaching said plate ends to said bars;

each mounting bar comprising a generally L-shaped portion in cross-section formed with a rear limb lying behind said plates and adapted to be secured to a support, and a side limb extending over and effectively concealing said plate ends;

the plates at the ends of said bars being provided with extensions which project rearwardly and at least largely conceal said rear limbs and said attaching means.

4,523,403

FISHING DEVICE

Jim S. Ivy, 1135 Bates, SE., Grand Rapids, Mich. 49506, and Willie C. Gray, 506 Storrs, SE., Grand Rapids, Mich. 49507

Filed Feb. 21, 1984, Ser. No. 581,616

Int. Cl.³ A01K *97/10*

U.S. Cl. 43—17 **6 Claims**

1. A fisherman's signalling device, comprising:

a frame having a receptacle for receiving the butt of at least one fishing pole, and also having a base and a beam providing a support for a fishing pole engaging said receptacle and inclined upwardly therefrom;

an actuating bar moveably mounted on said frame;

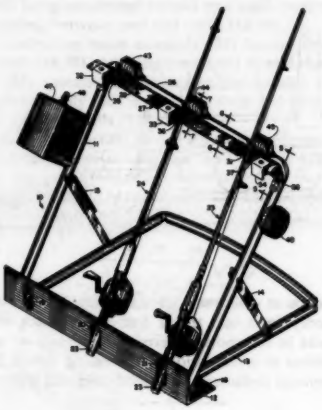
first switch means, said first switch means being mounted on said frame, and having an operating member disposed for actuation by said bar;

first signal means mounted on said frame, and adapted to be energized by said first switch means;

second switch means, said second switch means having an operating member and being mounted on one of said beam and said bar;

locating means fixed with respect to one of said beam and said bar, and adapted to position a fishing pole on said second switch means operating member;

second signal means mounted on said frame, and adapted to be energized by said second switch means; and



electrical circuit means providing energy for said signal means.

4,523,404

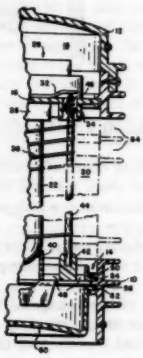
INSECT KILLING DEVICE WITH REMOVABLE ELECTRICALLY CONDUCTIVE GRID

Sal G. DeYoreo, Andover, Mass., assignor to Armatron International, Inc., Melrose, Mass.

Filed Aug. 15, 1983, Ser. No. 523,002

Int. Cl.³ A01M *1/04, 1/22*

U.S. Cl. 43—112 **8 Claims**



8. In an insect killing device of the type having an electrically powered light source surrounded by an electrically conductive grid, the said light source and grid being enclosed within a housing having a side wall surrounding and spaced outwardly from said grid, said side wall being closed at its upper end by an impervious top and defining an open port at its lower end, said light source and said grid being energizable by an electric AC power source external to said housing via electric circuit components located in said housing, said side wall having an array of openings through which insects attracted by said enrgized light source may pass to come into contact with and be electrocuted by said energized grid, the improvement comprising: said grid being supported on a di-

electric carrier, said carrier having a dieletric bottom portion dimensioned and arranged to enter said port and to block access to said grid through said port when said grid is energized, a shelf internally subdividing said housing into upper and lower chambers, said electric circuit components being located in said upper chamber and said grid, carrier and light source being located in said lower chamber, first means extending through said shelf for separably connecting said grid to said electric circuit components, second means for separably connecting said light source to said electric circuit components, said grid and carrier being removable as a unit from said housing through said port, with the arrangement of said grid and the bottom portion of said carrier in relation to that of said side wall and said port being such that said grid is separated from said circuit components and thus is de-energized prior to said port being unblocked by removal of said bottom portion therefrom, said light source also being removable from said housing through said port following removal of said grid and carrier.

4,523,405

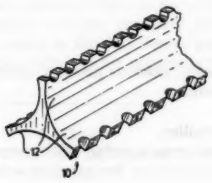
SUPPORT STAKE FOR PLANTS

Ciro Madonia, 1390 Beaufort Dr., Burlington, Ontario, Canada

Continuation-in-part of Ser. No. 320,139, Nov. 12, 1981, abandoned. This application Sep. 21, 1983, Ser. No. 534,500

Int. Cl.³ A01G *17/04*; B32B *1/00*

U.S. Cl. 47—47 **3 Claims**



1. An extruded plastic stake having a solid homogeneous cross section with a pointed end portion at one end thereof and a hollow cylindrical driving cap at the other end, the balance of the length of the stake being of substantially uniform cross section having at least three extending wing portions providing longitudinally extending solid ribs encircled by said cap, said ribs having outwardly concave surfaces extending therebetween comprising longitudinally extending recesses to receive in use an object to be secured to the stake in located relation with a said recess, said solid cross section ensuring said point section being solid, to resist damage to the stake and facilitate penetration on being driven into the ground, said wing portions including thickened longitudinally extending edge portions having substantially arcuate edge surfaces, with a series of shallow serrations extending across said edge surfaces of at least one said wing portion to provide in use longitudinal locating engagement of said grooves with a tie member when wrapped in secured relation about the stake.

4,523,406

DOOR FRAME AND DOOR ASSEMBLY FOR A MINE STOPPING

John M. Kennedy, and William R. Kennedy, both of P.O. Box 38, Taylorville, Ill. 62568

Filed Jul. 15, 1983, Ser. No. 513,747

Int. Cl.³ E05D *15/58*

U.S. Cl. 49—254 **10 Claims**

1. A door frame and door assembly for installation in a man-door opening in a mine stopping, said assembly comprising a rectangular frame having a top, bottom and sides, a door, and hinge means for the door, the hinge means mounting the door for swinging movement on an axis extending transversely across the frame adjacent one face of the frame and adjacent the top of the frame, the hinge means also mounting the door for up and down movement of the door relative to the frame, the door being of such height as to occupy a closed position in the frame inclined down from the hinge means toward the other face of the frame with its lower edge bearing on the bottom of the frame and with the door at its top being engaga-

ble with and extending up past the top of the frame at said one face of the frame, the door being adapted to swing up from its said closed position for opening it, and being adapted to shift up relative to the frame upon distortion of the frame such as may result from pressure on the frame in a mine stopping in a mine.

4,523,407

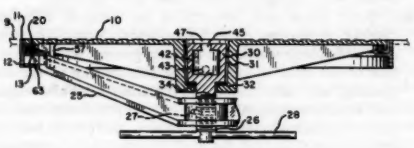
HATCH COVER

Fred L. B. Miller, deceased, late of Lake Oswego, Oreg. (by Dorothy W. Miller, personal representative), assignor to Dorothy W. Miller, Lake Oswego, Oreg.

Filed Sep. 23, 1983, Ser. No. 537,052

Int. Cl.³ E05C *21/02*

U.S. Cl. 49—465 **12 Claims**

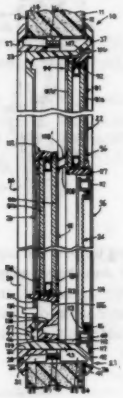


1. A flush deck hatch or manhole construction having a cover with locking and clamping means, said construction comprising a supporting ring of T-shaped cross section having a continuous inwardly directed horizontal flange portion and a vertical portion extending above and below said flange, a cover plate having a peripheral gasket groove in its under side, overlying said flange portion of said supporting ring, said groove being formed by a pair of vertical walls on said cover plate having confronting horizontal flanges on their lower edges to retain a gasket in said groove between said walls, said walls having apertures in their upper portions to vent the groove on opposite lateral sides of said groove, and a resilient gasket in said groove having greater vertical thickness than the depth of the groove to support said cover plate on said horizontal flange portion of said supporting ring, the horizontal thickness of said gasket being greater than the space between said confronting horizontal flanges on said walls of said groove to retain the gasket in the groove and less than the width of the space between said walls of said groove to permit lateral expansion of said gasket in said groove and allow said vertical walls of the groove to seat on said flange portion of said supporting ring when said gasket is squeezed against said flange.

4,523,408
DOOR LIGHT

Dale K. McConnell, 597 Old Orchard Rd., Holland, Mich. 49423

Filed Jul. 21, 1983, Ser. No. 516,162
Int. Cl.³ B60J 5/04
U.S. Cl. 49—502 11 Claims



1. A prefabricated door light unit for use in an opening formed in a door, said door light unit comprising:

ringlike frame means adapted to be fixedly mounted in said door opening and defining therein a window opening;

window pane means mounted on said frame means for covering said window opening;

said frame means including inner and outer ringlike frame units which mount in said door opening from respective inner and outer sides thereof, said inner and outer frame units having a slidable telescopic connection therebetween when mounted within said door opening;

said outer frame unit comprising an integral, one-piece, ringlike, preformed outer frame having a ringlike peripheral wall which is adapted for engagement with the outer face of the door in surrounding relationship to the door opening, said outer frame also including a tubular support wall structure integrally fixed to said peripheral wall and projecting substantially transversely therefrom into said door opening, said tubular wall structure defining an outer peripheral support surface thereon, said tubular wall structure also defining said window opening therein;

said outer frame having a substantially S-shaped cross section and including inner and outer approximately parallel walls which are integral with and project in opposite directions from the opposite ends of an intermediate wall, said outer wall defining said peripheral wall, and said intermediate wall defining said tubular wall structure, said intermediate wall defining said outer support surface on the outer periphery thereof with said latter surface extending substantially perpendicular to the vertical plane of the door opening, said intermediate wall defining thereon an inner peripheral surface which, at least along the bottom of said outer frame, slopes downwardly as it projects from the inner wall to said outer wall to permit drainage of water therefrom exteriorly of the door;

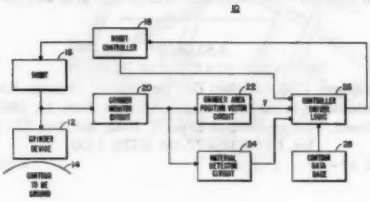
said inner frame unit comprising a rectangular ringlike frame having a peripheral wall which is positionable adjacent and engageable with the inner face of the door in surrounding relationship to the door opening, said inner frame also defining transverse support walls which are fixed to and project transversely from said peripheral wall into said door opening, said transverse walls defining thereon an inner support surface whereby said transverse walls project into said door opening into the region between the edge of said door opening and said tubular wall structure so that said inner and outer support surfaces are slidably engaged with one another so that the inner and outer frames can be slidably moved toward one another until the respective peripheral walls thereof respectively engage the inner and outer faces of the door; and

said frame means including fastener means extending between said inner and outer frames for fixedly connecting same together.

4,523,409
AUTOMATIC CONTOUR GRINDING SYSTEM

Thomas L. De Fazio, Watertown, Mass., assignor to The Charles Stark Draper Laboratory, Inc., Cambridge, Mass.

Filed May 19, 1983, Ser. No. 495,982
Int. Cl.³ B24B 49/00
U.S. Cl. 51—165.71 35 Claims



1. An automatic contour grinding system for smoothing a surface, comprising:

a robot;

a robot controller;

a grinder device mounted to said robot;

means for monitoring the grinding action of said grinder device;

means, responsive to said means for monitoring, for determining the vector position of the grinder area in contact with the contour to be smoothed with respect to the grinder spindle;

means, responsive to said means for monitoring, for detecting the material being ground;

a contour data base for providing the shape of the contour being ground; and

a controller driver unit responsive to said contour data base, said means for determining the vector position, and said means for detecting for driving said grinder device to grind until there is achieved the shape of the contour being ground.

4,523,410
COMPOSITE GUIDE MECHANISM

Junichi Yoshioka; Koichi Koizumi, both of Chiba; Akira Kanai, and Kazuo Shiba, both of Tokyo, all of Japan, assignors to Citizen Watch Co., Ltd., Japan

Continuation of Ser. No. 287,040, Jul. 27, 1981, abandoned. This application Dec. 27, 1983, Ser. No. 564,782
Claims priority, application Japan, Aug. 18, 1980, 55-113124
Int. Cl.³ B24B 41/00
U.S. Cl. 51—166 R 5 Claims

1. A guide mechanism for a surface grinding machine including a sliding body comprising:

(a) a pair of columns disposed on the main body of said surface grinding machine opposite to each other;

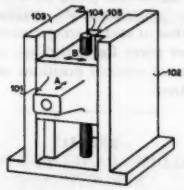
(b) a feed screw provided between said columns along the same direction thereof;

(c) a housing for a grinding wheel spindle having a mounting portion which is driven by said feed screw and on which the grinding wheel is mounted in the direction perpendicular to that of said feed screw;

(d) a guideway plate attached to said housing for said grinding wheel spindle by means of a securing means in the reverse side of said mounting portion of the housing;

(e) the guideways of said respective elements composed of a hydrodynamic guideway and a hydrostatic guideway which are arranged in opposed relationship and vertically;

(f) said hydrodynamic guideway being continuously and intermittently supplied on the slide surface thereof with lubricant so as to wet or infiltrate the slide surface;



(g) said hydrostatic guideway provided with a plurality of hydrostatic recesses arranged in the moving direction so as to form an oil film between the guide surface and slide surface thereof by supply of oil under pressure; and

(h) means for supplying said oil under pressure to said hydrostatic recesses so as to press said sliding body toward said hydrodynamic guideway through the oil film thereon under a substantially constant pressure, said hydrodynamic guideway acting as the only master guide;

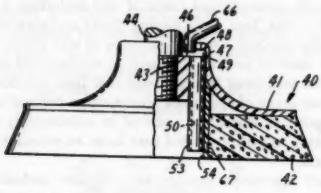
said means including restrictors for regulating the pressure in said recesses.

4,523,411

WET SURFACE TREATING DEVICE AND ELEMENT THEREFOR

Conrad T. Freerks, Maplewood, Minn., assignor to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.

Filed Dec. 20, 1982, Ser. No. 451,281
Int. Cl.³ B24B *23/02, 55/02*
U.S. Cl. 51—170 MT **1 Claim**



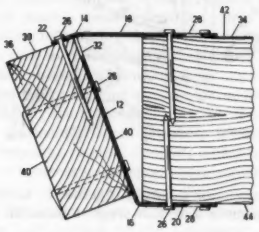
1. A rotatable element capable of being mounted on the end of an output shaft of a motor-driven surface treating device, said element having a first surface including a shaft mounting means for rotation of said element about an axis generally transverse to said first surface and an opposite second surface including a flexible pad for adhesively attaching a coated abrasive sheet, said first surface including a basin-like recess having a bottom surface which is generally transverse to said axis and substantially free of radial undulations and including sidewalls defining a channel opening toward and extending around said axis, said opposite second surface including a flexible pad having an opening within or adjacent to an area thereof generally centered with respect to said axis, and at least one passage through said element communicating between said channel and said opening so that liquid collected in said recess, will flow into said channel, through said passage and out of said opening when the element is stationary or rotated about said axis, said pad comprising open-celled foam and the portion of said pad surrounding said opening being lined with a sleeve of a resilient liquid-impermeable material.

4,523,412

HANGER BRACKET AND METHOD OF USING SAME

Ulrich Sielaff, Madison, Wis., assignor to United Steel Products Company, Montgomery, Minn.

Filed Nov. 4, 1982, Ser. No. 439,135
Int. Cl.³ E04B *1/32*
U.S. Cl. 52—81 **10 Claims**



1. A hanger bracket for fastening a framing member to a strut of a geodesic building structure the struts of which define planar faces of at least part of a regular geometric shape having more than six such faces, the planes of which intersect the planes of adjacent faces, the strut having a planar mounting surface presented generally toward an adjacent strut and extending lengthwise along the strut and generally parallel to a line drawn from the center of the geometric shape through the longitudinal axis of the strut, the hanger bracket comprising:

(a) a back having top and bottom ends;

(b) a top support member extending from the top end of the back and inclining toward the bottom end at an angle to the back of substantially one-half the angle of intersection of the planes of the adjacent faces; and

(c) a bottom support member opposed to the top support member and extending parallel thereto from the bottom end of the back, the back being adapted to be fastened flat against the planar mounting surface of the strut with the top end extending generally away from the center of the geometric shape and with the support members extending into a planar face defined in part by the strut, the top and bottom support members being free of any structure extending therefrom and toward the other, thus permitting said top and bottom support members to receive therebetween the end of the framing member which is both sloped and skewed relative to said strut and to hold the framing member parallel to the top and bottom support members and in the plane of the face regardless of the angle between the longitudinal axes of the framing member and the strut.

4,523,413

HANGER FASTENER

Bruce G. Koppenberg, 9675 Mt. Baker Hwy., Deming, Wash. 98244

Filed Mar. 18, 1983, Ser. No. 476,592
Int. Cl.³ E04B *1/40*
U.S. Cl. 52—139 **4 Claims**

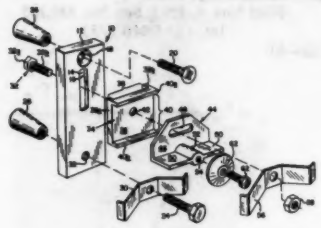
1. A slab hanger-fastener comprising:

a frame plate,

means for mounting the frame plate against a support surface,

a guide member mounted on the frame plate for movement in a path extending between the ends of the frame plate, said guide member including means forming a rear channel on one side thereof which receives the frame plate and confines the guide member to movement in said path,

a slab support member mounted on the guide member for movement in another path extending transversely of said first-mentioned path, said guide member having means forming a front channel on the opposite side of the guide member which receives the slab support member and confines the slab support member for movement in said other path,



fastener means for securing together in fixed position said guide member and slab support member on said frame plate,

said slab support member including slab positioning means on the front thereof for positioning slab edges, and

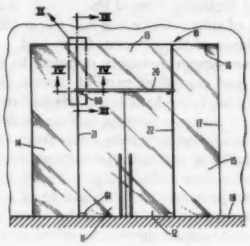
a retainer member detachably mounted on the slab support member.

4,523,414

GLASS DOOR ASSEMBLY WITH TRANSOM BAR

William J. Horgan, Jr., Pittsburgh, Pa., assignor to Blumcraft of Pittsburgh, Pittsburgh, Pa.

Filed May 19, 1983, Ser. No. 496,135
Int. Cl.³ E06B *1/04*
U.S. Cl. 52—204 **17 Claims**



14. In a glass door assembly comprising at least one glass door, a glass transom above the glass door extending from the door to a building structure thereabove, and at least one glass sidelight, laterally of the door and transom, extending from the door and transom to a lateral building structure, the improvement comprising a generally horizontally disposed transom bar beneath the transom in weight-supporting engagement therewith, and with a generally vertically disposed bar support rod at at least one end of the transom, between the transom and adjacent portion of a sidelight, said rod being supportingly carried at its upper end by the building structure, and with the lower end of the rod being in supporting engagement with the transom bar, wherein said transom and adjacent sidelight portions have ends facing toward each other defining space for the rod therebetween, with said rod being thinner than the thickness of the glass of said transom and said sidelight, and with a sealant disposed in said space forming a rod-burying joint between ends of said transom and sidelight, whereby said bar presents an unsupported appearance at its rod-supported end, wherein said rod is provided at its upper end with means facilitating vertical adjustment of the rod relative to the building structure, wherein the rod is provided at its upper end with means facilitating lateral adjustment of the rod between the transom and side light, wherein said support bar includes means at its said end adjacent said sidelight for securing said bar end to said sidelight, wherein said securing means includes a notch means in said bar, in receiving engagement with an edge portion of said sidelight, wherein said door is provided with pivot pin means protruding upwardly toward said transom, and wherein bearing means is provided carried by said transom bar, in receiving engagement with said pivot pin, wherein said bearing means is disposed in said bar, including adjustment means being provided carried by said bar, for adjusting the position of said bearing means along said bar, for adjusting the upper pivot for said door, including means for adjusting the relative vertical positions of said bar and rod relative to each other.

4,523,415

ONE-PIECE BUILDING PANEL FOR WALLS AND LIKE STRUCTURES

Milton Rosen, 800 NE. 155 St., North Miami Beach, Fla. 33162

Filed Jan. 25, 1984, Ser. No. 573,850
Int. Cl.³ E04C *2/52*
U.S. Cl. 52—220 **14 Claims**

1. A building panel of the type primarily designed for use as both interior and exterior walls, said building panel comprising:

(a) a substantially one-piece construction formed of lightweight, cementitious material and including a front face and a rear face each having outer surfaces disposed to define opposite exposed surfaces of said panel,

(b) an interior portion disposed in sandwiched relation between said front face and said rear face and comprising a planar array of apertured construction defined in part by a plurality of apertures oriented in substantially transverse relation to said front and rear faces an extending therebetween,

(c) said apertured construction further including spacer walls contiguously disposed to each of said plurality of apertures and defining the peripheral boundaries thereof, said spacer walls connected to one another and extending transversely to and in interconnecting relation between said front and rear faces,

(d) border means disposed and structured for substantially defining a periphery of said panel and comprising vertically oriented peripheral portions disposed in spaced apart and parallel relation to one another, each vertical peripheral portion including a first recess extending along the length thereof,

(e) said first recess positionable into substantially aligned, mating engagement with a correspondingly positioned first recess of a next adjacent positioned and connected building panel,

(f) channel means for maintaining utility lines therein and having a substantially closed cross-sectional configuration and defined by mating engagement of said first recesses of said adjacently positioned building panels, and

(g) conduit means mounted on said building panel for hous-

ing utility faciities therein and disposed in at least partially spaced relation to said channel means.

4,523,416

FLOORING SYSTEM WITH SERVICE TRUNKING PROVISION

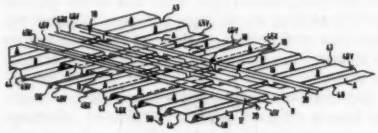
Harold J. W. Payne, and Ghislaine R. L. Payne, both of Handley, England, assignors to H. H. Robertson (U.K.) Limited, England

Filed May 16, 1983, Ser. No. 495,293

Claims priority, application United Kingdom, May 15, 1982, 8214225

Int. Cl.³ E04F *17/08*

U.S. Cl. 52—221 **20 Claims**



1. In or for flooring that includes corrugated sheeting affording channels for services at spaced intervals via channels of its corrugation and presenting between ends of successive said sheeting a gap transverse to the directions of said channels, services segregation apparatus fitting into said gap and comprising an elongate divider having an upper edge and a lower edge and being apertured at spaced intervals along its length and below its upper edge; and, associated one with each aperture of the divider, a plurality of upwardly closed elements some extending from one side of the divider and others extending from the other side of the divider in each case to different selected said channels at said edges of said sheetings; the divider then defining paths to each side thereof and separated thereby for services to pass over the said elements at the same side of the divider and further providing access for such services only to the said elements at the other side of the divider via its said apertures and thence to said channels.

4,523,417

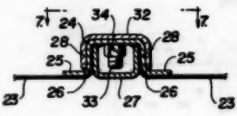
RADIANT ENERGY SHIELDED ENCLOSURES

William H. Beastall; Vernon R. Ballew; Richard D. Collier, and John T. Bagby, all of Evansville, Ind., assignors to International Steel Company, Evansvile, Ind.

Filed Dec. 7, 1982, Ser. No. 447,697

Int. Cl.³ E04B *1/00*

U.S. Cl. 52—273 **8 Claims**



1. In a radiant energy shielded enclosure of a type constructed from a plurality of taut metal sheets wherein some of the sheets occupy common planes on the enclosure and others occupy two right angular planes intersecting at corners of the enclosure, the enclosure further including compound corners formed by the intersections of sheets in a common plane with sheets in two right angular planes, and the two right angular planes also being perpendicular, the improvement comprising separable radiant energy shielding connections for the sheets of the enclosure in common planes, the sheets in right angular planes intersecting at corners and for the sheets intersecting at compound corners of the enclosure, each such connection comprising at least a main structural member extending longitudinally of the edge portions of adjacent sheets and a cooperative continuous sheet tensioner element interfitting with the main structural member and fixed thereto and binding the edge portions of the sheets between the fixed structural member and tensioner element, and radiant energy shielding splices at intervals along said connections where adjacent ends of sections of the main structural members are in abutment, and each splice including a relatively short splicing member engaging and interfitting with adjacent end portions of the main structural members and bridging the abutments of such members and being releasably secured to the main structural members of the enclosure, and the connections for sheets of the enclosure in common planes each comprising a main channel member, the legs of said main channel member having a pair of side longitudinal flanges along its length whereby the adjacent edge portions of sheets pass over the side flanges and enter the main channel member, and the continuous sheet tensioner element comprising an opposing channel element within the main channel member and engaging the edge portions of said sheets to bind them in the main channel member, releasable fastener means for the opposing channel elements within he main channel members, said releasable fastener means comprising splined nuts secured within spaced openings in the web portion of said main channel and cooperative screws received in openings formed in the web portion of the tensioning channel and threadably engaging said nuts within the space between the opposed channels, and each splice of the connection including a relatively short splicing channel member engaging over adjacent abutting end portions of sections of the main channel member, the web portion of the splicing channel member engaging the corresponding web portion of the main channel member, and the legs of the splicing channel member engaging the corresponding legs of the main channelmember substantially the full extent thereof, and separate releasable fasteners extending through the web portions of the main channel member and splicing channel member for interconnecting each short splicing channel with said abutting end portions of the sections of the main channel member, said separate releasable fasteners comprising at least a pair of threaded studs fixedly connected to the web Portion of said splicing channel member adjacent opposite ends thereof and extending inwardly of the splicing channel and extending through apertures in the web portions of the main channel members, said apertures being adjacent abutting end portions of said main channel members, and nuts within the space between the opposed channels engaging said threaded studs for tightly engaging the splicing channel member with said main channel members

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4,523,418

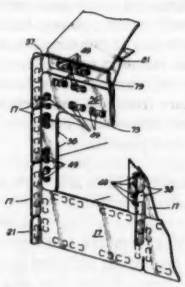
MODULAR CONSTRUCTION SYSTEM

Jon R. McLaughlin, 1 Rutherford La., St. Louis, Mo. 63131

Filed Aug. 15, 1983, Ser. No. 523,096

Int. Cl.³ E04B *1/348;* A63H *33/08*

U.S. Cl. 52—284 **19 Claims**



1. A construction system comprising modules formed of substantially stiff sheet material, each module being formed

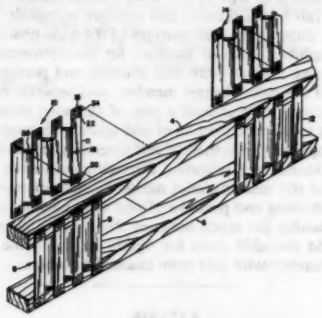
adjacent its edges with pairs of oppositely facing tabs, each pair of tabs being defined by pairs of substantially C-shaped cuts in the material of the module with the respective C-shaped cuts of each pair facing each other and spaced apart a short distance, the material being scored along parallel straight lines connecting the terminals of the respective cuts to permit the resultant tabs to be bent out of the plane of the module, corresponding tabs on all modules being similarly spaced and oriented whereby the scored lines and cuts defining the respective tabs on lapped margins of a pair of modules are in registry with each other, said modules being securable to each other by lapping margins of a pair of said modules to place pairs of said tabs of the respective modules in registry with each other and bending both tabs of each pair about the scored line in the same direction away from the respective modular sheets, whereby to lock the respective modules to each other.

4,523,419

RIBBED CONNECTOR AND JOIST STRUCTURE

Joaquin J. Palacio, and Carlos C. Cristobal, both of Miami, Fla., assignors to Gang-Nail Systems, Inc., Miami, Fla.

Filed Jun. 24, 1983, Ser. No. 507,500
Int. Cl.³ E04C *3/02*
U.S. Cl. 52—690 **32 Claims**



1. A metal ribbed connector for interconnecting two elongated wooden members used in constructing a structure, said ribbed connector comprising:

a plurality of elongated connecting members, each having a plurality of teeth struck out from both of its end sections, said teeth extending in one direction for being embedded in the wooden members to be interconnected, each elongated connecting member being formed as a continuous planar structure from one end section to the other, and said elongated connecting members being parallel and lying in the same plane; and,

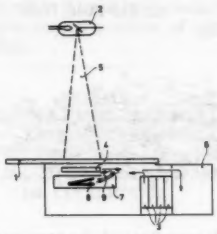
a plurality of support members connected to said elongated connecting members in an area between said end sections of said elongated connecting members, each of said support members interconnecting adjacent ones of said elongated connecting members, said support members extending from said connecting members in the same direction as said teeth and being shorter than said elongated connecting members so that when said metal ribbed connector is attached to the wooden members said support members lie between the wooden members and act as a structural support for such wooden members.

4,523,420

X-RAY EXAMINATION APPARATUS HAVING AT LEAST ONE FILM STORAGE MAGAZINE

Harald Kayser, Wedel, and Wilfried Pfeiffer, Quickborn, both of Fed. Rep. of Germany, assignors to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 387,994, Jun. 14, 1982, abandoned. This application Aug. 24, 1984, Ser. No. 644,151
Claims priority, application Fed. Rep. of Germany, Jun. 27, 1981, 3125397
Int. Cl.³ G03B *41/16*
U.S. Cl. 53—266 R **8 Claims**



1. An X-ray examination apparatus having a light-tight film processing section comprising:

at least one film storage magazine for storing film sheets; and means for unloading film sheets, one at a time, from the film storage magazine;

a cassette loading and unloading station for accommodating a cassette; and

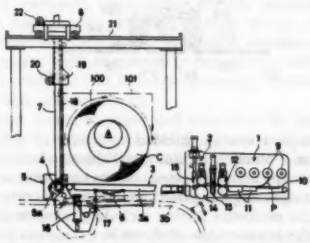
a film guide device defining a first path between the film storage magazine and an exposure station and defining a second path between the film storage magazine and the cassette loading and unloading station, said film guide device being capable of switchably transporting film either to or from the exposure station along the first path or to or from the cassette loading and unloading station along the second path.

4,523,421

METHOD AND APPARATUS FOR WRAPPING METAL COIL

Hiroshi Kataoka, 1-5-8 Asahi, Iyo-Mishima-shi, Ehime-ken, Japan

Filed May 24, 1982, Ser. No. 381,308
Int. Cl.³ B65B *13/02*
U.S. Cl. 53—399 **1 Claim**



1. A method for winding a wrapping paper on the outer periphery of a metal coil, which comprises the steps of:

selecting from a plurality of rolls of wrapping paper having various widths in a storage one particular roll of wrapping paper of a required width, drawing the leading end of the wrapping paper out of the roll, correcting the curling ten-

dency of the wrapping paper paid off the roll thereby stretching said wrapping paper to full length, cutting the drawn and corrected portion of wrapping paper to a length conforming to the length of the periphery of the metal coil being wrapped, forwarding by means of a conveyor the cut length of wrapping paper as stretched to full length to a position below said metal coil which is slightly lifted from the conveyor by a suspension arm, winding the cut and forwarded length of wrapping paper on a horizontally retained winding roll of a winding mechanism with a wrapping paper end winding belt disposed at a position slightly forward from the position directly below said metal coil, discontinuing the winding of wrapping paper at the time that the tail end of the cut length of wrapping paper has reached a predetermined position slightly rearward from the position directly below said metal coil, retaining said tail end of the cut length of wrapping paper at said predetermined position on said conveyor by applying suction from said conveyor to said tail end, rendering said winding roll rotatable and moving the winding roll, which has the cut length of wrapping paper wound thereon and retains its horizontal posture, upwardly, transversely and downwardly around said metal coil, thereby allowing the cut length of wrapping paper unwound from said winding roll to be draped on the lower half portion and the whole upper portion of the outer periphery of said metal coil, and manually joining the leading end of said cut length of wrapping paper separated from said winding roll and the tail end of wrapping paper to each other on the outer periphery of said metal coil.

4,523,422

APPARATUS FOR INTRODUCING TAPE CASSETTES OR THE LIKE AND SUPPLEMENTS INTO HINGED BOXES

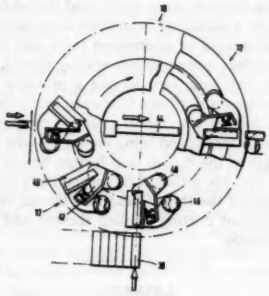
Heino Ilsemann, Am Wehkamp 3, 2800 Bremen, Fed. Rep. of Germany

Filed Jan. 20, 1984, Ser. No. 572,422

Claims priority, application Fed. Rep. of Germany, Jan. 22, 1983, 3302112

Int. Cl.³ B65B *57/06, 43/39*

U.S. Cl. 53—566 **10 Claims**



1. In an apparatus for introducing tape cassettes or the like and supplements into hinged boxes including a turrett arranged to rotate step-by-step on a horizontal axis, a hinged box insertion station located essentially vertically below the axis of said turret and including a plurality of holding means, with means for supplying hinged boxes and inserting the same into said holding means from below, a cassette and supplement insertion station disposed essentially horizontally in the plane of the axis of rotation of said turret, with means for inserting a cassette and a supplement into an at least partially opened hinged box at said cassette and supplement insertion station, an ejection station disposed essentially horizontally in the plane of the axis of rotation of said turret and offset by about 180° from said cassette and supplement insertion station, the improvement which comprises:

said holding means comprising:

a cover flap,

a suction device on said cover flap and arranged to open and close the cover of said hinged box, and

an underside flap comprising two jaws for holding the underside of said hinged box,

both said cover flap and said underside flap being pivotable about an axis close to their longitudinal edges facing the turret axis, and

cam rollers engaging said flaps to pivot the same,

said cover flap in the hinged box insertion station being pivotable from an essentially radial closed position into an open position, while said underside flap is arranged to be brought into an essentially radial closed position,

said cover flap in the cassette and supplement insertion station being arranged to be brought to an essentially radial closed position with said underside flap being pivotable from its essentially radial closed position into an open position upon engagement with the underside of a hinged box,

said cover flap in the ejection station being pivotable from its essentially radial closed position to an open position while releasing the cover of said hinged box, with said underside flap being arranged to be brought into its radial closed position.

4,523,423

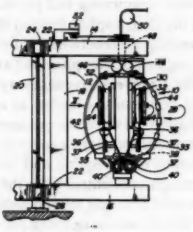
CRADLE FOR A TWISTING MACHINE

Jean Bouffard, Lachine; André Dumoulin, Montagnes, and Edgar K. Lederhose, Chateauguay, all of Canada, assignors to Northern Telecom Limited, Montreal, Canada

Filed Dec. 27, 1983, Ser. No. 565,761

Int. Cl.³ D07B *7/06;* **B60T** *13/04;* **B65H** *59/04*

U.S. Cl. 57—59 **7 Claims**



1. A cradle for a twisting machine for filamentary material comprising:

a reel spindle for a reel of filamentary material and rotatably mounted upon a support and a tensioning device for the material as it is drawn from the reel, the tensioning device comprising:

a brake drum rotatable with the spindle and having inner and outer cylindrical brake surfaces;

first and second brake shoes disposed for braking engagement, the first shoe with the inner and the second shoe with the outer brake surface, the shoes mounted upon first and second brake arms respectively to move the shoes towards and away from their braking surfaces;

a rotatable tensioning pulley;

biassing means to urge the pulley and its axis in one direction of movement and to urge pivotal movement of the first and second brake arms to hold the shoes normally in brake engaged positions with the braking means, the pulley being movable in the opposite direction against the biassing means; and

a brake release actuator operably disposed between the pulley and the arms and comprising a brake release link

pivotally movable about either of two relatively offset axes and a brake operating link, the actuator operable when the pulley then moves in said opposite direction and with the links connected and relatively inclined to subject the release link to a component of load causing it to pivot primarily about a first of the axes to move the first brake arm and its brake shoe from its brake engaged position and then to pivot primarily about the second axis to move the second brake arm and its brake shoe from its brake engaged position.

4,523,424

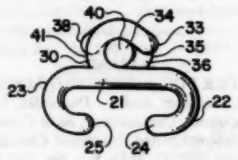
UNIVERSAL RING TRAVELER

Donald R. Hoover, Rte. 3, Ratchford Rd., Gastonia, N.C. 28052

Filed Apr. 9, 1984, Ser. No. 598,198

Int. Cl.³ D01H *7/60*

U.S. Cl. 57—125 **3 Claims**



1. A traveler for use with a ring for winding yarn on a bobbin, said traveler comprising end portions with hooks slidably mounted on the ring, a spline formed integral with the end portions and extending therebetween, a first shoulder projecting from the rear surface of the spline and away from the hooks and having a first transverse passageway therethrough, the passageway being between the hooks, an access opening providing communication between the passageway and the atmosphere adjacent one end portion, a second shoulder extending from the rear surface of the spline and having a second passageway therethrough concentric with the passageway in the first shoulder, the said first and second shoulders being spaced from each other, and an access opening providing communication between the second passageway and the atmosphere adjacent the opposite end portion, whereby the medial portion of a yarn may be readily positioned in a selected passageway.

4,523,425

REINFORCEMENT CABLE FOR ELASTOMERIC CONDUITS

Franz Schild, Heinsberg, and Wolfgang Weidenhaupt, Erkelenz, both of Fed. Rep. of Germany, assignors to Akzo NV, Arnhem, Netherlands

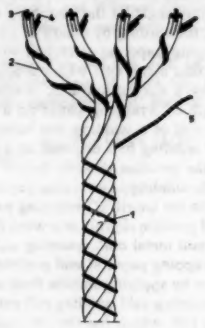
Filed Apr. 26, 1983, Ser. No. 488,774

Claims priority, application Fed. Rep. of Germany, Apr. 26, 1982, 3215506

Int. Cl.³ D07B *1/06, 1/14*

U.S. Cl. 57—212 **15 Claims**

1. Reinforcement cable of metal wires for elastomeric conduits, comprising at least two cabled-together strands each having two or more wires, said strands including at least one



outerlying strand composed of two or more core wires wrapped by at least one coil-shaped strand winding wire.

4,523,426

HIGH TEMPERATURE RESISTANT SEWING THREAD AND METHOD OF MAKING

Eddie W. Scott, Mebane, and Errol N. Seltzer, Greensboro, both of N.C., assignors to Collins & Aikman Corp., New York, N.Y.

Continuation-in-part of Ser. No. 323,242, Nov. 20, 1981,. This application Feb. 10, 1984, Ser. No. 578,845

Int. Cl.³ D01H *13/26, 3/00*

U.S. Cl. 57—247 **15 Claims**

1. A synthetic sewing thread of continuous multifilament construction characterized by its ability to lessen the buildup of heat at the needle of a high speed sewing machine during the operation thereof, even during the sewing of relatively heavy weight fabrics, so as to allow the thread to be utilized as a substitute for the sewing threads conventionally required in high temperature sewing applications, such as cotton spun yarns or cotton sheathed core yarns, said thread being further characterized by a substantially uniform cross section throughout the thread devoid of alternating thick and thin areas to provide a smoother more uniform sewing thread, said thread comprising at least one yarn having a plurality of crimped texturized continuous synthetic filaments, said crimped texturized filaments having a nonlinear crimped configuration providing bulk to the thread and being entangled with one another along the length of the thread, and further bound together by twist so as to provide a thread of substantially uniform cross section throughout the thread, and said thread having a heat protective lubricant coating applied thereto and penetrating the filament bundle.

4,523,427

FILAMENT YARN

Paul L. I. Carr, Dacre Banks, England, assignor to Imperial Chemical Industries Limited, London, England

Continuation of Ser. No. 430,911, Sep. 30, 1982, abandoned. This application Aug. 20, 1984, Ser. No. 642,739

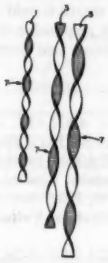
Claims priority, application United Kingdom, Oct. 26, 1981, 8132250

Int. Cl.³ D02G *3/06*

U.S. Cl. 57—248 **3 Claims**

1. A yarn of a synthetic, fibre-forming, polymeric material comprising a plurality of filaments having a substantially rectangular cross-section and having a birefringence asymmetry across the width of the filaments, each of the filaments being twisted about the longitudinal axis of the filament in such a manner that the overall lateral dimension of the twisted fila-

ment corresponds substantially with the length of the rectangular cross-section of the filament, the frequency of twist of a filament in the yarn differing from the frequency of twist of all



the other filaments in the yarn and the twist in all of the filaments reversing itself at random intervals along the length of the filaments.

4,523,428

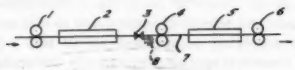
PROCESS FOR MANUFACTURING TEXTURED MULTIFILAMENT YARN HAVING ALTERNATING TWIST

Takao Negishi; Teiryo Kojima, both of Otsu, and Kazuo Tomiita, Tokyo, all of Japan, assignors to Toray Industries, Inc., Tokyo, Japan

Division of Ser. No. 209,217, Nov. 21, 1980, Pat. No. 4,402,178. This application Dec. 27, 1982, Ser. No. 452,998

Int. Cl.³ D02G *1/02, 3/24, 3/26*

U.S. Cl. 57—288 **16 Claims**



1. A process for manufacturing alternatingly twisted yarn, wherein a thermoplastic synthetic multifilament yarn is subjected to false twisting along a substantially stationary path in a manner to avoid ballooning, and the yarn is drawn under a draw ratio equal to or less than the natural draw ratio, by means of a false twisting device, wherein a yarn contacting member is disposed at a location downstream of said false twisting device, whereby a front end of false twisted region in said yarn is prevented from being transmitted across said yarn contacting member, wherein an over detwisted portion is generated in said yarn located between said false twisting device and said yarn contacting member, and wherein even after said yarn is passed through said false twisting device said yarn is retained in a false twisted condition at a location at least adjacent to said false twisting device.

4,523,429

COLD START SURGE CURRENT LIMITING SYSTEM FOR A HYDRAZINE THRUSTER AUGMENTATION HEATER

John D. Bingley, Hatboro, Pa., assignor to RCA Corporation, Princeton, N.J.

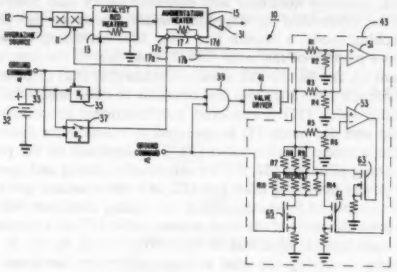
Filed Apr. 1, 1983, Ser. No. 481,384

Int. Cl.³ F02K *9/68*

U.S. Cl. 60—203.1 **9 Claims**

1. A cold start surge current limiter for a thruster heater resistance element coupled to a battery bus comprising:

load resistance means coupled in series with said battery bus and said heater resistance element to limit the current through said heater resistance element at the start of said thruster; and



means responsive to the resistance of said heater element for bypassing said load resistance means to decrease the loss when the heater element heats up to alone provide a safe current level.

4,523,430

FLUID FLOW CONTROL SYSTEM

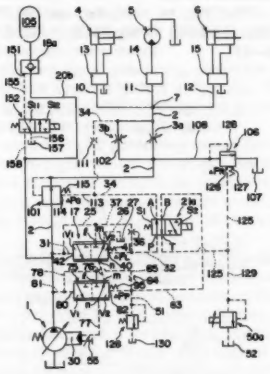
Kenji Masuda, Takatsuki, Japan, assignor to Daikin Kogyo Co., Ltd., Osaka, Japan

Filed Mar. 12, 1982, Ser. No. 357,753

Claims priority, application Japan, Mar. 19, 1981, 56-41067; Mar. 19, 1981, 56-41068

Int. Cl.³ F16D *31/02*

U.S. Cl. 60—420 **12 Claims**



1. A fluid flow control system comprising means for operating selectively in a power matching mode and a maximum discharge flow mode, which comprises a variable displacement pump (1) having a discharge flow control section (30), said pump operating in a variable discharge mode in said power matching mode and in a constant discharge mode in said maximum discharge mode; at least one actuator; a main line (2) extending between the pump (1) and the actuator and having a restriction means (3, 3*a*, 3*b*, 3*c*, 3*d*) disposed therein; a load sensing valve (17) having pilot and spring chambers; a first fluid circuit including a power matching pilot line (32, 34) in selective communication with said spring chamber and a first pilot line (31) in communication with said pilot chamber, the differential pressure between the upstream and downstream sides of the restriction means (3, 3*a*, 3*b*, 3*c*, 3*d*) being supplied to the pilot and spring chambers of the load sensing valve (17) in said power matching mode to operate said load sensing

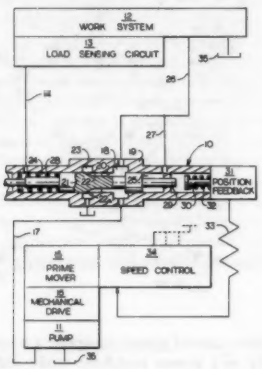
valve (17) to connect the discharge flow control section (30) selectively to one of the main line (2) and a fluid reservoir to control the discharge rate of the pump (1) such that said differential pressure upstream and downstream of said restriction can be controlled to a predetermined value in the power matching mode; a branch line (20*a*, 20*b*) extending outwards from a portion of the main line (2) upstream of the restriction means (3, 3*a*, 3*b*, 3*c*, 3*d*); a valve means (18, 18*a*) disposed on the branch line (20*a*, 20*b*) and operable to open when the load sensing valve (17) is rendered non-functional to control the pump and the pump (1) is operated in a maximum discharge mode; a mode selector valve (21, 21*a*) disposed on the power matching pilot line (32, 34) for selectively closing and opening the power matching pilot line (32, 34); and a second pilot line (37) capable of fluid-connecting the spring chamber (40) and the pilot chamber of the load sensing valve (17) to a portion of the main line (2) upstream of the restriction (3, 3*a*, 3*b*, 3*c*, 3*d*), thereby rendering the load sensing valve non-functional and selecting the maximum discharge mode; whereby the power matching mode can be established when the power matching pilot line (32, 34) is opened to operate the load sensing valve (17) and, on the other hand, the maximum discharge flow mode can be established when the power matching pilot line (32, 34) is closed and the second pilot line is opened to make the pressures respectively in the pilot and spring chambers of the load sensing valve (17) equal to each other, whereby the load sensing value (17) is rendered non-functional and held in one position by the action of a spring thereof thereby causing said pump (1) to operate at a maximum discharge rate and to simultaneously permit the valve means (18, 18*a*) to open.

4,523,431

LOAD RESPONSIVE SYSTEM

Tadeusz Budzich, Moreland Hills, Ohio, assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Feb. 16, 1984, Ser. No. 580,971
Int. Cl.³ F04B *49/00*; F15B *11/02, 15/18*
U.S. Cl. 60—431 **21 Claims**



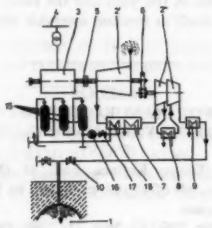
1. A fluid power and control system including load actuating means subjected to load pressure, pump means driven by a variable speed prime mover, means selectively communicating said pump means with said actuating means, and rotational speed control means of said prime mover, means operable to transmit load pressure signal from said actuating means to said rotational speed control means, means operable to transmit a pump discharge pressure signal from said pump means to said rotational speed control means, outlet flow bypass means associated with said pump means and being active to bypass flow, control means of said bypass means having means operable to vary the bypass flow to maintain a relatively constant pressure differential between said discharge pressure and said load pressure when said prime mover means works at a certain minimum rotational speed, and means in said rotational speed control means operable to vary the rotational speed of said prime mover to maintain a relatively constant pressure differential between said discharge pressure of said pump means and said load pressure, said means in said rotational speed control means being sequentially responsive to said outlet flow bypass means being inactive above said certain minimum rotational speed.

4,523,432

AIR STORAGE POWER STATION

Hans-Ulrich Frutschi, Riniken, Switzerland, assignor to BBC Brown, Boveri & Company, Limited, Baden, Switzerland

Filed Sep. 30, 1982, Ser. No. 429,460
Claims priority, application Switzerland, Nov. 16, 1981, 7344/81
Int. Cl.³ F02C *1/04, 1/06*
U.S. Cl. 60—659 **1 Claim**



1. A method for operating an air storage power station having a gas turbine with an upstream combustion chamber, a compressor, an air reservoir receiving compressed air from said compressor and selectively connected to said combustion chamber for supplying compressed air to said combustion chamber, an electrical machine operatively connected to said gas turbine and said compressor, a recuperator providing heat exchange between air being supplied to said combustion chamber and gas being discharged from said gas turbine, and means for storing and selectively transferring heat from said compressor to said air being supplied to said combustion chamber at a point upstream of said recuperator, said method comprising the steps of:

initiating the supply of compressed air from said reservoir to said combustion chamber so as to begin turbine operation;

transferring stored heat from said means for storing to said supplied air; and

limiting said transfer of supplied heat to a start up period of said turbine operation.

4,523,433

COLD STORAGE BODY

Masahiro Takahashi, Shizuoka; Toshio Hagiwara, Tokyo; Takao Nishizaki, Tokyo, and Kinya Niizeki, Tokyo, all of Japan, assignors to Nippon Light Metal Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 371,060, Apr. 23, 1982, abandoned. This application Jun. 13, 1984, Ser. No. 620,156
Claims priority, application Japan, May 25, 1981, 56-78864
Int. Cl.³ B65B *63/08*
U.S. Cl. 62—60 **18 Claims**

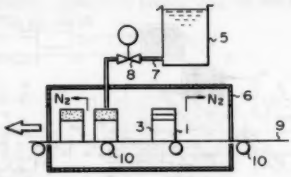
1. A method of making a cold storage body comprising the steps of:

providing a vessel consisting of a thin metallic material;

substantially filling said vessel with a liquid cold storage medium of low viscosity, so as to occupy most of the volume of said vessel;

removing air from said vessel and medium;

filling the remaining space with a vaporizable, liquified inert gas which is introduced into said vessel at a flow rate sufficient to increase the internal pressure in said remaining space to about 1.85 to about 2.15 atmospheres;



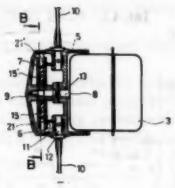
controlling the amount of vaporizable liquified inert gas by adjusting the flow rate and the pouring time to obtain an internal pressure in said vessel of 2 Kg/cm^2 after a cover member is sealingly applied to a trunk member which, together with said cover member, forms said vessel; and hermetically sealing said vessel.

4,523,434

AIR VENTILATOR

Byung E. Yoo, #616-5, Daemyung-dong, Nam-ku,, Daegu-si, Rep. of Korea

Filed Sep. 5, 1984, Ser. No. 647,525
Claims priority, application Rep. of Korea, Jan. 14, 1984, 84-281; Mar. 2, 1984, 84-1740
Int. Cl.³ F23J *25/08*
U.S. Cl. 62—116 **4 Claims**



1. An air ventilator for ventilating indoor air to the environment comprising

a motor provided with a shaft,

a rotor mounted on said shaft,

a plurality of fan blades pivotally attached to the rotor,

a rotating circular plate having a plurality of sliding slots and a plurality of connecting holes mounted on said shaft of the motor,

a fixed circular plate connected to the rotating circular plate with pins and mounted on the shaft of said motor,

centrifugal weight members disposed between the fixed circular plate and the rotating circular plate, and

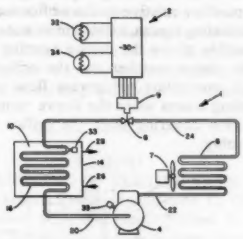
a torsion coil spring connecting the centrifugal weight member with the rotating circular plate for elastically supporting the weight member, whereby when the motor is operating, the centrifugal weight members engage the rotating circular plate, apply a circumferential directional force thereto, and angularly displace the circular plate, said displacement being transmitted to the fan blades for ventilating the inside air to the environment; and when the motor is not operating the centrifugal weight members return to their original position by the torsion coil spring, thereby closing all air-passages between the fan blades.

4,523,435

METHOD AND APPARATUS FOR CONTROLLING A REFRIGERANT EXPANSION VALVE IN A REFRIGERATION SYSTEM

Richard G. Lord, Liverpool, N.Y., assignor to Carrier Corporation, Syracuse, N.Y.

Filed Dec. 19, 1983, Ser. No. 562,896
Int. Cl.³ F25B *41/00*; G05D *15/00*
U.S. Cl. 62—212 **4 Claims**



1. A refrigeration system comprising:

(A) a condenser for condensing refrigerant vapor;

(B) an evaporator for evaporating liquid refrigerant to provide cooling;

(C) compression means for compressing refrigerant vapor formed in the evaporator and for passing the compressed refrigerant vapor to the condenser;

(D) an adjustable refrigerant expansion valve for controlling the passage of refrigerant from the condenser to the evaporator;

(E) superheat temperature signal generating means for generating a superheat temperature signal which is a function of the superheat of refrigerant passing from the evaporator to the compression means;

(F) superheat rate signal generating means for generating a superheat rate signal which is a function of the rate of change of the superheat of refrigerant passing from the evaporator to the compression means;

(G) valve control signal generating means for generating a valve control signal which comprises a function of a fraction of the difference between the superheat temperature signal and a predetermined superheat temperature signal, added to a function of a multiple of the superheat rate signal;

(H) valve control means comprising an electric motor connected to the refrigerant expansion valve for adjusting the refrigerant expansion valve in response to the valve control signal provided by said microcomputer; and

(I) signal processing means for clamping the superheat temperature signal supplied to said valve control signal generating means between predetermined high and low temperature limits, thereby decreasing the sensitivity of the refrigerant expansion valve to large deviations in the superheat temperature signal from a predetermined superheat temperature.

4,523,436

INCREMENTALLY ADJUSTABLE ELECTRONIC EXPANSION VALVE

John W. Schedel, Lafayette, and Richard G. Lord, Liverpool, both of N.Y., assignors to Carrier Corporation, Syracuse, N.Y.

Filed Dec. 22, 1983, Ser. No. 564,543
Int. Cl.³ F25B *41/04*; F16K *31/02*
U.S. Cl. 62—222 **6 Claims**

1. A refrigeration system including a compressor, a condenser, and an evaporator, and including an electronic refrigerant expansion valve comprising:

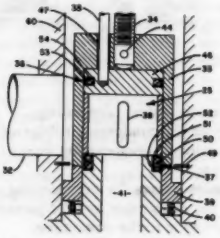
an inlet means for receiving refrigerant from the condenser;

an outlet means for discharging refrigerant to the evaporator;

an orifice means, connected between the inlet means and the outlet means, said orifice means including a generally cylindrical orifice assembly having a top end which is capped, a bottom end which is open and connected to receive refrigerant from the inlet means, and at least one orifice opening, located between the capped end and the open end of said assembly, for controlling refrigerant flow between the inlet means and the outlet means;

a sleeve member which slides over the orifice means to adjust the size of the orifice opening depending on the position of the sleeve member relative to the orifice means;

a first annular sealing means, located in an annular recess in the orifice assembly above the orifice opening and positioned between the sleeve member and the orifice assembly, for substantially preventing refrigerant flow across said first annular sealing means when the sleeve member is in a fully closed position covering over the orifice opening in the orifice assembly;



a second annular sealing means, located in another annular recess in the orifice assembly below the orifice opening and positioned between the sleeve member and the orifice assembly when the sleeve member is in its fully closed position, for substantially preventing refrigerant flow across said second annular sealing means when the sleeve member is in its fully closed position;

a spring biased follower means, positioned to follow movements of the sleeve member, for covering over the second annular sealing means to hold the second annular sealing means in its annular recess when the sleeve member moves out of contact with the second annular sealing means and for partially uncovering the second annular sealing means when the sleeve member moves into contact with the second annular sealing means; and

motor means, operatively connected to the sleeve member, for incrementally adjusting the position of the sleeve member relative to the orifice means in response to electronic digital control signals received by said motor means.

4,523,437

VEHICLE AIR CONDITIONING SYSTEM

Patrick B. Briley, Stillwater, Okla., assignor to Hybrid Energy Systems, Inc., Stillwater, Okla.

Continuation-in-part of Ser. No. 196,864, Oct. 14, 1980, Pat. No. 4,374,467, which is a continuation of Ser. No. 55,524, Jul. 9, 1979, Pat. No. 4,248,049, which is a continuation-in-part of Ser. No. 948,043, Oct. 2, 1978, abandoned. This application Jan. 21, 1982, Ser. No. 341,239

Int. Cl.³ F25B *27/02*

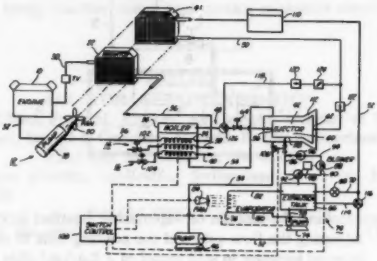
U.S. Cl. 62—238.4 **19 Claims**

1. An air conditioning system for a vehicle having an engine, an engine exhaust system, and an engine cooling system comprising:

a boiler for heating a refrigerant in a heat exchanging relationship with at least a selected one of said engine exhaust system and said engine cooling system, the boiler having an inlet portion and an outlet portion through which the refrigerant passes;

an ejector having a drive inlet portion, a suction inlet portion, and an outlet portion, the drive inlet portion being in fluid communication with the outlet of said boiler;

a load evaporator in heat exchanging relationshp for air conditioning, the load evaporator having an outlet portion connected to the suction inlet portion of the ejector; and



a blower having an inlet portion and an outlet portion, the inlet portion being in fluid communication with the outlet portion of the load evaporator and the outlet portion being in fluid communication with the suction inlet portion of the ejector.

4,523,438

APPARATUS FOR RECOVERY OF HEAT FROM FUMES IN A HEATING SYSTEM OR FROM THE AMBIENT AIR

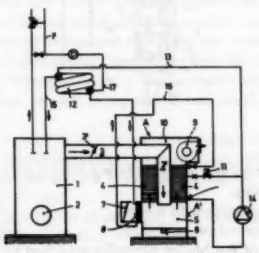
Paolo Curti, Via Belsoggiorno 7, 6500 Bellinzona, Switzerland

Filed Jul. 6, 1983, Ser. No. 511,196

Claims priority, application Switzerland, Jul. 21, 1982, 4436/82

Int. Cl.³ F25B *27/02*

U.S. Cl. 62—238.6 **2 Claims**

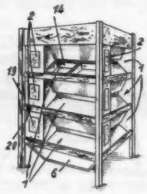


1. Apparatus for the recovery of heat from fumes in a heating system or from the ambient air, comprising a boiler with a burner for heating water, a flue for carrying fumes from the burner to a casing, the casing having a mixing chamber at its bottom and a collection chamber at its top and an evaporator between said mixing and collection chambers, a suction fan for removing gas from said collection chamber, said flue discharging said fumes into said mixing chamber, means to admit ambient air into said mixing chamber, a closed expansion-compression refrigeration cycle in heat exchange with said water and including said evaporator, the refrigerant in said closed refrigeration cycle passing downwardly through said evaporator in countercurrent with said fumes rising from said mixing chamber through said evaporator, and a heat exchanger through which said refrigerant passes to warm said ambient air as said ambient air enters said mixing chamber.

4,523,439
REFRIGERATED DISPLAY UNIT

Bernard A. Denisot, Nogent-sur-Marne, France, assignor to Societe Laitiere de Veron, Savigny-le-Temple, France

Filed Dec. 14, 1983, Ser. No. 561,203
Claims priority, application France, Dec. 14, 1982, 82 20913; Nov. 14, 1983, 83 18010
Int. Cl.³ A47F *3/04*
U.S. Cl. 62—251 **21 Claims**

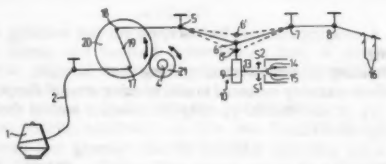


1. A refrigerated display case comprising:
(a) a framework comprising a plurality of first panels connected to each other to form a structure having a substantially polygonal cross-sectional area, each of said first panels being connected to an adjacent one of said first panels and having a portion extending beyond the point at which each said first panel is connected to an adjacent first panel, said framework further comprising a plurality of second panels, each of said second panels having one end which is connected to an extending portion of a respective one of said first panels, said framework defining a plurality of generally vertical refrigerated compartments, each of said compartments being defined by one of said first panels, one of said second panels, and an extended portion of a first panel other than said one first panel;
(b) a plurality of evaporators in each of said compartments, said plurality of evaporators being fluidically interconnected, at least one control valve being associated with each of said evaporators;
(c) a deflecting plate being positioned adjacent each of said evaporators;
(d) a plurality of generally vertically spaced shelves being positioned within each of said compartments; and
(e) a product container being positioned on each of said shelves and having a bottom surface spaced above each of said shelves.

4,523,440
REGULATING DEVICE FOR THE LENGTH OF THREAD ABSORBED BY A KNITTING MACHINE

Eugène J. Voisin, Bouilly; Jean-Pierre A. Matthelié , La Chapelle St Luc, and Jacques A. Mesny, Longvilliers, all of France, assignors to Institut Textile de France, Boulogne-Billancourt, France

Filed Sep. 28, 1983, Ser. No. 536,770
Claims priority, application France, Oct. 8, 1982, 82 16934; Dec. 28, 1982, 82 21935
Int. Cl.³ D04B *15/44*
U.S. Cl. 66—146 **10 Claims**



1. A device for regulating the absorbed length of thread per mesh of a knitting machine and for correcting variations in tension of a thread supplying a textile machine comprising tensioning means comprising a movable member arranged to cause movement thereof to tension said thread, a reversible electric motor, means coupling said motor to said movable member to cause rotation of said motor to produce movement of said member, movable sensing means comprising a thread guide for receiving said thread and a mass weighing on said guide so that the thread guide exerts on the thread a force counterbalanced by the tension in the thread, variations in absorbed length of thread per mesh or in tension of said thread producing movement of said sensing means, first switch means responsive to movement of said sensing means in one way for energizing said motor to rotate in one direction and second switch means responsive to movement of said sensing means in the other way for energizing said motor to rotate in the reverse direction.

4,523,441
HANDLING OF TEXTILE YARN

George E. Braybrook, Thurmaston; David C. Corby, Cosby; Mark A. Shelton, Leicester, and William E. A. Shelton, Oadby, all of England, assignors to Alan Shelton Limited, Croft, England

Filed Nov. 22, 1983, Ser. No. 554,304
Int. Cl.³ D06B *3/06, 23/04*
U.S. Cl. 68—5 C **7 Claims**

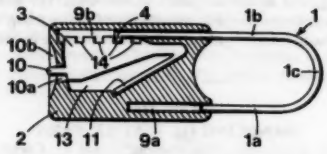
1. Yarn handling apparatus comprising a plurality of bobbin support rods with a yarn bobbin mounted upon each bobbin support rod, each yarn bobbin having an axial center line and yarn wound thereabout, enclosure means surrounding the plurality of bobbin support rods, means defining an air flow path through the enclosure means for directing air flowing along said air flow path to impinge on the yarn of said bobbins, means for introducing humidity into said air flow path so that the yarn being wound on said bobbins and being unwound therefrom is subjected to humidified air flow, said humidity introducing means including a sleeve member of fabric for providing a passageway for a portion of the air flow path, and water supply means supplying water to the fabric of the sleeve member to maintain the fabric in a moist condition despite evaporation therefrom into the air flowing along the air flow path, said bobbin support rods being mounted in pairs, said pairs of bobbin support rods being superimposed to form a number of side-by-side columns, said pair of bobbin support rods being arranged so that the axial center line of each bobbin of the apir of bobbins converges at a single yarn-receiving point, and so that a columnar space is formed between a bobbin of one pair of bobbins and a bobbin of an adjacent pair of bobbins, wherein the sleeve member is arranged so as to at least partially occupy said columnar space, said sleeve member having apertures therein, each of said apertures being located at least substantially adjacent to an appropriate one of said bobbins, and air supply means for providing air under pressure to the interior of the sleeve member so that air is forced through the apertures therein to impinge upon the bobbins.

4,523,442

KEY-HOLDER

Jack Martin, Geneva, Switzerland, assignor to Attilio Brentini, Ecublens, Switzerland

PCT No. PCT/CH81/00098, § 371 Date Apr. 22, 1982, § 102(e) Date Apr. 22, 1982, PCT Pub. No. WO82/00751, PCT Pub. Date Mar. 18, 1982
PCT Filed Aug. 28, 1981, Ser. No. 375,121
Claims priority, application France, Aug. 29, 1980, 80 18948
Int. Cl.³ A47G 29/10
U.S. Cl. 70—459 8 Claims



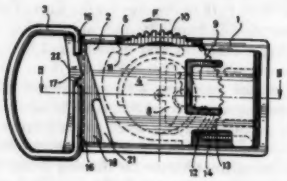
1. Key-holder, comprising a casing (2, 7, 7*a*) and a ring (1, 5, 6) for receiving the keys, characterized in that the ring (1) is mounted movable on the casing (2) between an open position and various closed positions where its length outside the casing is adjustable between a maximum and a minimum, and in that it comprises a mechanism (3, 11, 14, 4 FIG. 2; 15*a*, 15*b*, 16) for locking the ring on the casing in the one of those closed positions where it has been brought and for which its portion outside of the casing has a length appropriate to the number of the keys received, the key ring (1) is formed by a U-shaped part having two parallel branches (1*a*, 1*b*) of unequal length adapted to slide in corresponding grooves (9*a*, 9*b*) of the casing (2).

4,523,443

KEY KEEPER

Wilhelmus M. A. Momemers, 9 Bisschop Schrijnenstraat, 6041 XK Roermond, Netherlands

Filed Jun. 14, 1983, Ser. No. 504,329
Claims priority, application Netherlands, Jun. 21, 1982, 8202497
Int. Cl.³ A44B 15/00; A47G 29/10
U.S. Cl. 70—459 7 Claims



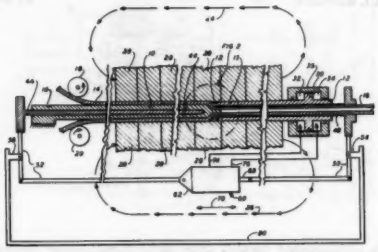
1. Key keeper comprising: a key-retaining loop with an opening for the receipt of keys, said loop being connected to a loop holder slideably mounted within a housing, the loop being closed in case the holder is slid into the housing, whereas said loop can be opened in case the holder is partially slid out of the housing, means for locking the holder in its slid-in position in the housing, the locking means comprising a locking member moveably disposed in the housing and which can be locked in said housing by at lease one snap connection, and means operatively connecting said loop holder and said locking member for sliding movement of said loop holder out of said housing upon movement of said locking member.

4,523,444

METHODS OF AND APPARATUS FOR CONTROLLING THE GAP BETWEEN A MANDREL AND DIE DURING EXTRUSION

Francis J. Fuchs, Jr., 593 104th Ave., Naples, Fla. 33940

Filed Dec. 13, 1982, Ser. No. 449,561
Int. Cl.³ B21C 31/00, 33/00, 51/00
U.S. Cl. 72—21 8 Claims



8. Method of controlling the gap between a mandrel and an extrusion die during extrusion, comprising the steps of:

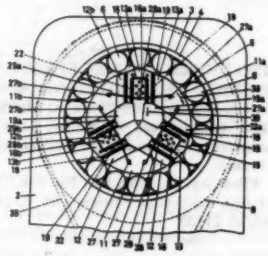
detecting that the actual gap between the mandrel and die during extrusion is larger than a predetermined gap and causing relative movement between the mandrel and die to close the actual gap and establish the predetermined gap, and detecting that the actual gap between the mandrel and die during extrusion is smaller than the predetermined gap and causing relative movement between the mandrel and die to open the actual gap and establish the predetermined gap.

4,523,445

HOT WORKING METHOD AND APPARATUS IN THE SWAGING WORKING TECHNOLOGY

Keiichiro Yoshida, 641, Mobara, Mobara City, Chiba Prefecture, Japan

Filed Jan. 19, 1983, Ser. No. 459,243
Claims priority, application Japan, Jan. 26, 1982, 57-10472
Int. Cl.³ B21D 37/16; B21J 7/16, 13/02
U.S. Cl. 72—69 10 Claims



1. A swaging machine for carrying out hot working, comprising:

a housing having a central opening therethrough;

rollers rotatably mounted in said housing around the periphery of said central opening for rotation around their respective axes;

a rotor rotatably mounted in said opening and having a plurality of guide means with radially extending guide surfaces thereon;

a plurality of radially extending buckers on said rotor and having ball bearings between said buckers and said guide surfaces forming the only contact between said buckers

and said guide surfaces, said buckers having cam surfaces on the radially outer ends for engagement with said rollers for periodically urging said buckers radially inwardly when said rotor is rotated;

a plurality of die members, one mounted on each of said buckers for radial movement therewith and having ball bearings between said bucker and said die member forming the only contact between said die member and said bucker, the ends of said die members protruding beyond the inner ends of said buckers and being exposed in the center of said opening;

biasing means for urging said die member and the corresponding bucker radially outwardly;

means connected to said rotor for rotating said rotor; and

heater means adjacent the inner ends of said die members for heating the inner ends of said die members.

4,523,446

MACHINE FOR THE DEEP SLITTING OF THE PERIPHERY OF NON PLANAR DISCS USED FOR PROVIDING WHEELS HAVING A PNEUMATIC TIRE

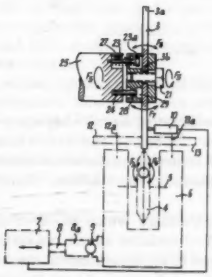
Roger Müller, Neuilly sur Seine, France, assignor to Elermetal, Paris, France

Filed Sep. 30, 1982, Ser. No. 432,092

Claims priority, application France, Dec. 29, 1981, 81 24389; Mar. 18, 1982, 82 04599

Int. Cl.³ B21H *1/02*

U.S. Cl. 72—71 **8 Claims**



1. A machine permitting deep slitting in the periphery of a non-planar disc to obtain a wheel provided for mounting a pneumatic tire thereon, comprising:

support means for rotatively supporting the disc;

slitting roller means positioned at the disc periphery for the deep slitting of the disc, said roller means having an axis of rotation; and

means for driving the slitting roller means, at least one of said support means and said driving means being carried by means for automatically compenstating for flatness irregularities of the disc said compensating means including means for oscillatably supporting said roller means about an axis normal to said axis of rotation.

4,523,447

WIRE COILER

Walter Sticht, and Gerhard Schwankhart, both of Attnang, Austria, assignors to Stiwa-Fertigungstechnik Sticht Gesellschaft m.b.H., Attnang, Austria

Filed Sep. 13, 1983, Ser. No. 531,902

Claims priority, application Austria, Sep. 30, 1982, 3614/82

Int. Cl.³ B21F *3/04*

U.S. Cl. 72—144 **20 Claims**

1. A wire coiler comprising

(a) an elongated coil support,

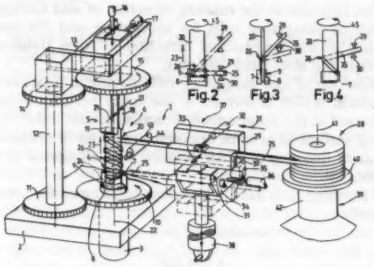
(b) a gripping device holding the coil support for rotation therewith, the gripping device comprising

(1) two gripping elements spaced from each other in the direction of elongation of the coil support,

(c) a drive connected to the gripping device and common to the two gripping elements for rotating the gripping device, the drive having an axis extending parallel to the direction of elongation of the coil support,

(d) a control for the drive,

(e) a device for guiding and feeding the wire to the coil support,



(f) an adjustment drive connected and responsive to the rotating drive control, the adjustment drive cooperating with the wire guiding and feeding device for adjustably positioning the same in directions parallel to the direction of elongation of the coil support and relative thereto, and

(g) another adjustment drive for adjustably positioning one of the gripping elements in relation to the other gripping element transversely said direction.

4,523,448

METHOD AND APPARATUS FOR CONTINUOUSLY PRODUCING A CORE MEMBER OF A TRIM

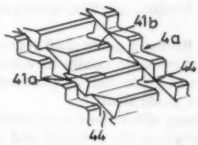
Hiromu Sakai, Aichi; Sazo Ezaki, Bisai, and Atsuo Kikuchi, Ichinomiya, all of Japan, assignors to Toyoda Gosei Co., Ltd., Nishikasugai, Japan

Continuation of Ser. No. 495,492, May 17, 1983, abandoned, which is a continuation of Ser. No. 220,716, Dec. 29, 1980, abandoned. This application Oct. 11, 1983, Ser. No. 540,850

Claims priority, application Japan, Dec. 27, 1979, 54-172383

Int. Cl.³ B21D *31/02*

U.S. Cl. 72—185 **5 Claims**



1. An apparatus for continuously producing a core member to be embedded within a trim, comprising:

a pair of slitting rolls for forming transversely extending slits in a band-shaped metallic plate at predetermined intervals in the longitudinal direction thereof, leaving at least one longitudinal extending unslit portion;

each of said slitting rolls having a plurality of teeth which are formed in the outer peripheral surface thereof at predetermined intervals in the longitudinal direction of said outer peripheral surface so as to extend in the width direction of said slitting rolls, leaving at least one predetermined untoothed portion;

each of said teeth being comprised of a land formed in a top

surface thereof, a cutting edge formed in one end of said land and a heel formed in the other end of said land; and

one of said slitting rolls being positioned to rotate in such a direction that said heel on each of said teeth precedes said cutting edge and being shaped so that the cutting edge strikes against said band-shaped metallic plate in advance of said heel, the angle formed by said cutting edge and said land ranging from 60 degrees to 90 degrees and wherein said cutting edge deviates from the line connecting said cutting edge and the center of said slitting roll in a direction opposite to the rotating direction of said slitting roll;

a pair of elongating rolls for elongating said slit metallic plate in the longitudinal direction to form transversely extending slots from said slits;

at least one of said elongating rolls having at least one projection which is formed in the outer peripheral surface thereof in the longitudinal direction of said outer peripheral surface so as to be opposed to said unslit portion; and

a pair of finishing rolls for pressing said elongated metallic plate into a flat plate;

said finishing rolls having a smooth pressing surface, respectively.

4,523,449

GRIP-FEED MACHINES USED WITH STAMPING AND BENDING MACHINES

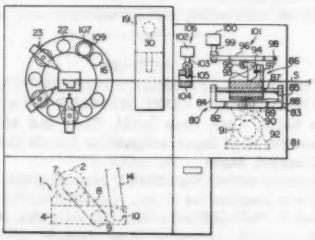
Yukinori Moriyama, and Tsukasa Ozaki, both of Iwakuni, Japan, assignors to Teijin Seiki Company Limited, Osaka, Japan

Filed Jul. 14, 1983, Ser. No. 513,862

Claims priority, application Japan, Jul. 19, 1982, 57-110027

Int. Cl.³ B21D *43/11, 43/13*

U.S. Cl. 72—421 **4 Claims**



1. A bending and grip-feed machine for gripping material in the form of strip, wire or the like and feeding the gripped material to said bending machine having a sun gear, comprising:

a guide bracket having a guide shaft received therein;

a cradle member movable axially forwardly and backwardly on and along said guide shaft and formed with a rack gear in parallel to said guide shaft;

a movable gripping mechanism cooperating with said cradle member for gripping the material and feeding the gripped material, in conjunction with said cradle member, while said cradle member is moving forwardly on and along said guide shaft;

a fixed gripping mechanism positioned along the path of travel of the material for gipping the material while said cradle member is moving backwardly on and along said guide shaft;

a pinion gear held in mesh with said rack gear of said cradle member;

a direct current servomotor connected to said pinion gear for driving said pinion gear;

control means for controlling numerically said servomotor to adjust movement of said cradle member and operating said movable gripping mechanism and said fixed gripping mechanism to controllably feed the material to the bending machine; and

an angular position detector having mounted thereon a detecting gear which is held in mesh with the sun gear of the bending machine for detecting the angular position of said detecting gear to produce a pulse signal indicative of the angular position of said detecting gear, said control means controlling numerically said servomotor to adjust movement of said cradle member and operating said movable gripping mechanism and said fixed gripping mechanism on the basis of said pulse signal.

4,523,450

METHOD OF CALIBRATING PROBE PINS ON MULTICOORDINATE MEASUREMENT MACHINES

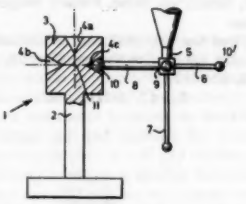
Klaus Herzog, Oberkochen, Fed. Rep. of Germany, assignor to Carl-Zeiss-Stiftung, Heidenheim/Brenz, Oberkochen, Fed. Rep. of Germany

Filed Sep. 20, 1982, Ser. No. 420,104

Claims priority, application Fed. Rep. of Germany, Nov. 7, 1981, 8132664

Int. Cl.³ G01C *25/00*

U.S. Cl. 73—1 J **11 Claims**



1. A method of calibrating a probe having several probe pins with a probe ball at the end of each pin, wherein the probe is mounted to a self-centering probe-measurement system of a multicoordinate measurement machine, characterized by the fact that:

(a) a calibration standard which has several centering elements formed of surfaces which converge towards each other is fastened to the measurement machine, said centering elements being distributed over the standard and facing in different directions,

(b) the geometry of the centering elements (shape and distances apart) as determined by measurement is stored in the computer of the coordinate measurement machine, each centering element being imparted an identifier,

(c) the orientation of the calibration standard is determined relative to the coordinate system of the measurement machine,

(d) each of the balls of the various probe pins is introduced once in self-centering manner into a selected one of the centering elements,

(e) the diameters or identifiers of the probe balls or ball used and the identifiers of the associated centering elements are fed into the computer, and that thereupon,

(f) a program is called up which, on basis of the data and measurement values fed, computes the relative position of the center points of the probe balls with respect to each other.

4,523,451

HYDRAULIC PROXIMITY PROBE

Clark S. Boster, Whittier, Calif., assignor to Borg-Warner Corporation, Chicago, Ill.

Filed Nov. 17, 1983, Ser. No. 552,882

Int. Cl.³ G01B *13/12*

U.S. Cl. 73—37.6 **3 Claims**

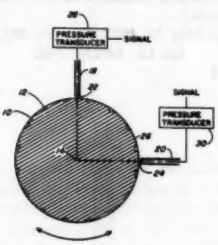
1. Apparatus for detecting anomalies in the spacing of a surface of a rotatable body from a stationary part when said

body rotates in a fluid medium surrounding said body, comprising:

at least a pair of probes circumferentially spaced from each other around the rotatable body, each probe being a hollow tube with at least a terminal end extending into said fluid medium and having said terminal end spaced a predetermined equal distance from the surface of said rotatable body;

said probes being free of connection with external fluid medium sources;

said rotatable body having a plurality of surface irregularities of like size and shape which are equally spaced from each other around the periphery thereof, said surface



irregularities being located in a plane generally passing through the terminal ends of said probes;

said surface irregularities generating pressure change pulsations in said fluid medium surrounding said body as the body rotates therein;

said probes picking up said generated fluid medium pressure change pulsations which vary in amplitude depending upon the spacing of the surface of the rotating body and the adjacent end of a probe; and

means to translate said pulsations into signals indicitive of the spacing of the surface of the rotating body from the probes;

said probes transmitting said pulsations to said translating means.

4,523,452

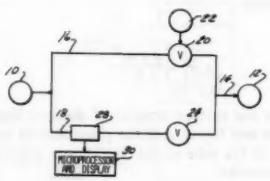
METHOD OF MEASURING LEAK RATES

Semyon Brayman, 28023 Berkshire, Southfield, Mich. 48076

Filed Apr. 23, 1984, Ser. No. 602,711

Int. Cl.³ G01M *3/26*

U.S. Cl. 73—40 **5 Claims**



1. A method of measuring leak rates from a cavity in test pieces of the same configuration, comprising the steps of:

placing the cavity of each of a series of sample test pieces in communication with a fluid pressure source to initiate a test cycle;

monitoring the flow rate to each of said cavities after placing each of said cavities in communication with said fluid pressure source;

determining the time after initiation of said test cycle when said flow rates become repeatable for successive test pieces;

measuring the flow rate from said fluid pressure source to said cavity at a predetermined time after initiating of said test cycle, after said time determined to produce repeatable flow rates, but prior to the achievement of steady state flow conditions, for two sample test pieces having differing effective leak rates;

determining the corresponding steady state flow rates for said two sample test pieces;

generating a calibration function of the form:

$$y=A+Bx$$

where y is the steady state flow rate to a test piece cavity placed in communication with a fluid pressure source, x is the flow rate measured at an earlier time in the test cycle, and A and B are constants calculated from the testing of the two sample test pieces;

placing the cavities of successive test pieces in communication with said fluid pressure source;

measuring the flow rate to said cavities at said predetermined time in said test cycle;

converting said measured flow rates into corresponding steady state flow rates by application of said calibration function to determine the leak rates from said cavities, whereby said test cycle for determining said leak rates is shortened by measuring said flow rates at said predetermined time.

4,523,453

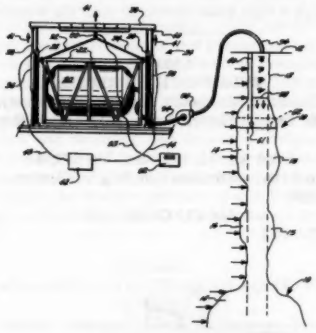
METHOD FOR DETERMINING BOREHOLE OR CAVITY CONFIGURATION THROUGH INERT GAS INTERFACE

Donald Faul, Sunset; Paul P. Broussard, Lafayette, and Donald W. Granger, Lake Charles, all of La., assignors to Testrac, Inc., Lake Charles, La.

Continuation-in-part of Ser. No. 390,321, Jun. 21, 1982, Pat. No. 4,455,869. This application Apr. 11, 1984, Ser. No. 599,290

Int. Cl.³ G01M *3/00*

U.S. Cl. 73—40.7 **12 Claims**



1. A method of detecting leakage within a borehole or cavity, comprising the following steps:

a. providing a first fluid in said borehole;

b. providing a second relatively inert fluid;

c. delivering a known weight of said second fluid under a known pressure and temperature down the borehole or cavity wherein leakage can be detected;

d. monitoring the change of weight of said measured fluid between certain measured intervals within said cavity;

e. determining the area occupied by said fluid within each of said intervals as a function of said weight change within each of said intervals;

f. establishing the static position of the inert gas interface within the borehole;

g. monitoring the movement of said interface over a given period of time; and

h. determining the amount and location of leakage of said second fluid from the relative movement of said interface within one or more measured intervals.

4,523,454

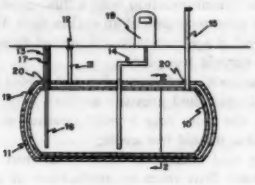
EXTERNAL JACKET SYSTEM AS SECONDARY CONTAINMENT FOR STORAGE TANKS

Bruce R. Sharp, 4090 Rose Hill Ave., Cincinnati, Ohio 45229

Filed Oct. 21, 1983, Ser. No. 544,013

Int. Cl.³ G01M *3/32*

U.S. Cl. 73—49.2 **21 Claims**



1. An underground storage tank system for liquids having secondary containment capability and leakage detection capability utilizing detecting fluid, comprising:

(a) a rigid inner tank for storing the liquid, having fill pipe and dispensing line;

(b) a flexible jacket encasing the inner tank so as to form a closed space between the tank and the jacket; and

(c) detecting means associated with the closed space between the inner tank and the flexible jacket for detecting leakage into or from either of said tank and jacket wherein the detecting means comprises a standpipe which extends from the flexible jacket to a point of observation and detecting fluid which fills the space between the tank and jacket such that any change in the level or color of the fluid occupying the closed space is readily observed through a sight glass associated with the standpipe.

4,523,455

TUBE TESTING PRESSES

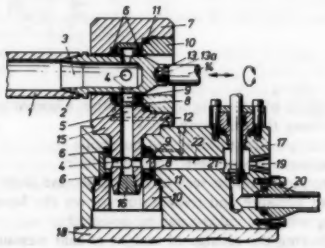
Theodor Zacharias, Meerbusch, Fed. Rep. of Germany, assignor to Kocks Technik GmbH & Co., Hilden, Fed. Rep. of Germany

Filed Sep. 12, 1983, Ser. No. 530,963

Claims priority, application Fed. Rep. of Germany, Nov. 23, 1982, 3243201

Int. Cl.³ G01M *3/28*

U.S. Cl. 73—49.5 **5 Claims**



1. Press for testing tubes provided with threaded ends by means of internal pressure comprising end pieces having threads at one end adapted to be screwed pressure medium-tight on the tube ends, a press body, sealing heads on the press body, said end pieces having outer surfaces at the end opposite the threaded end on which axially spaced seals inserted in the sealing head lie in a pressure medium-tight manner, the end pieces having cap-like axial boreholes closed on the end opposite the threaded end and having at least one essentially radial connecting borehole in said end opposite the threaded end connected to the axial borehole, said radial bore hole empties between two seals arranged with an axial spacing in the sealing heads in the zone of a pressure medium feed or drain line.

4,523,456

DETERMINATION OF SURFACE AND INTERFACIAL TENSION

Malcolm H. I. Baird, Dundas, and Inderjit Nirdosh, Thunder Bay, both of Canada, assignors to University of Waterloo, Waterloo, Canada

Filed May 28, 1982, Ser. No. 383,287

Int. Cl.³ G01N *13/02*

U.S. Cl. 73—64.4 **10 Claims**

1. A method of determining the surface tension of a test liquid, which comprises:

(a) calibrating a narrow elongate tube which has a bore which tapers uniformly from an open lower end to a closable upper end to determine a calibration constant (K) for that tube based on a liquid of known surface tension value by effecting the following sequence of steps (b) to (e) for said liquid of known surface tension value in place of the test liquid;

(b) filling said tube with a continuous phase of the test liquid and closing the upper end of the tube to prevent the test liquid from draining from the lower open end of the tube;

(c) injecting a bubble of air into the lower end of the tube;

(d) permitting said bubble to rise under the influence of capillary forces to an equilibrium point above which the bubble does not rise as a result of a balance of gravitational and capillary forces thereon; and

(e) calculating the surface tension of the test liquid from the relationship:

$$\sigma = \frac{\rho g d_o^2}{K} \quad (I)$$

wherein σ is the surface tension of the test liquid, ρ is the density of the test liquid, g is the gravitational constant, d_o is the diameter of the tube at the equilibrium point and K is the calibration constant.

4,523,457

ROTATIONAL SPEED MEASURING DEVICE WITH ECONOMY FIELD

Ulrich Bayer, Stuttgart, and Siegfried Ochs, Esslingen, both of Fed. Rep. of Germany, assignors to Daimler-Benz Aktiengesellschaft, Fed. Rep. of Germany

Filed Aug. 2, 1983, Ser. No. 519,740

Claims priority, application Fed. Rep. of Germany, Aug. 4, 1982, 3229065

Int. Cl.³ G01M *15/00*

U.S. Cl. 73—114 **2 Claims**

1. An installation for indicating fuel consumption, compris-

ing sensor means for the position of a drive pedal and storage means in which are stored a set of characteristic fuel consumption-engine rotational speed curves dependent on drive pedal position,

said installation including a tachometer means having a predetermined number of at least single-color light means, each of which is coordinated to a predetermined engine

rotational speed-partial range for indicating information about the specific fuel consumption as a function of the drive pedal position within this engine rotational speed-partial range corresponding to the stored characteristic curves, said light means being integrated into a dial of the tachometer means in a manner corresponding with the coordination thereof to the predetermined engine rotational speed-partial ranges.

4,523,458

INJECTOR TESTER

Kelvin J. Daniel, Gladesville, Australia, assignor to Keldan Industries Limited, New South Wales, Australia

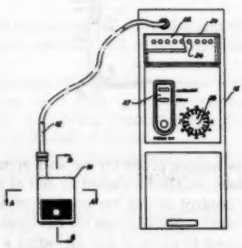
PCT No. PCT/AU82/00192, § 371 Date Jul. 25, 1983, § 102(e) Date Jul. 25, 1983, PCT Pub. No. WO83/01814, PCT Pub. Date May 26, 1983

PCT Filed Nov. 22, 1982, Ser. No. 522,167

Claims priority, application Australia, Nov. 26, 1981, PF/1712; Nov. 26, 1981, PF/1713

Int. Cl.³ G01M *15/00*

U.S. Cl. 73—119 A **8 Claims**



1. Apparatus for testing a fuel injector, said apparatus comprising a transducer adapted to be placed on said fuel injector to convert mechanical impulses to electrical signals, electronic processing means connected to the output of said transducer and comprising an amplitude detecting circuit for detecting the amplitude of the received electrical signals, and display means connected to the output of said amplitude detecting circuit providing a display proportional to the detected amplitude, wherein the transducer comprises a piezo-electric crystal sandwiched between two magnetic members.

4,523,459

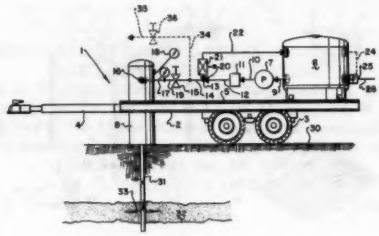
METHOD FOR PERFORMING STEP RATE TESTS ON INJECTION WELLS

Joe R. Hastings, Midland, Tex., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Filed Mar. 9, 1984, Ser. No. 588,023

Int. Cl.³ E21B *47/10, 43/26*

U.S. Cl. 73—155 **4 Claims**



1. In a method for performing a step rate test on an injection well, wherein water from a water supply conduit is injected into said injection well to drive petroleum materials through a subterranean geologic formation toward a production well, and wherein said step rate test comprises connecting a portable pumping unit having a pump and water storage tank into said water supply conduit so that injection water from said supply conduit can be collected in said tank and the pressure of the injection water supplied to said injection well from said tank can be increased as desired by operation of said portable pump in order to carry out said step rate test, the improvement comprising collecting injection water from said supply conduit in said tank, withdrawing water from said tank through said portable pump to increase the pressure of said water to a first predetermined level, delivering the thus pressurized water outflow from said portable pump into said injection well for injection into said geologic formation while monitoring the flow rate and injection pressure of said pressurized water until the flow rate and injection pressure become essentially constant, maintaining said pressurized water at said first predetermined level while continuously separating a portion of said portable pump pressurized water outflow from the main stream thereof and returning said separated portion to said tank, repeating the above-described water pressurization and injection procedure at different predetermined pressure levels below and above the fracture pressure of said formation and determining the fracture pressure of said formation therefrom.

4,523,460

FLUID MEASURING, TESTING AND ACCOUNTING SYSTEM

Steven E. Strickler, Jamestown; Jerry C. Simmons, Broomfield, both of Colo.; James Golladay, Jackson, Wyo., and Andrew D. Goldstein, Boulder, Colo., assignors to Montech Systems Incorporated, Boulder, Colo.

Filed Dec. 6, 1983, Ser. No. 558,594

Int. Cl.³ G01F *15/02, 15/06, 15/08, 23/00*

U.S. Cl. 73—200 **28 Claims**

1. A measuring, testing and accounting system for use in conjunction with a tank battery, said tank battery including:

(a) a liquid separator for separating a liquid mixture into at least two constituent liquids;

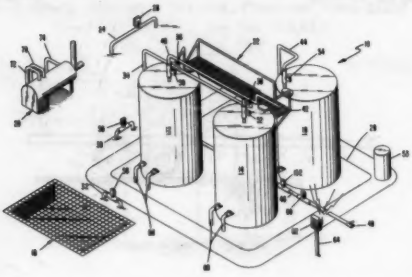
(b) at least one tank for one of the constituent liquids;

(c) conduit means connecting said liquid separator with said at least one tank;

(d) outlet pipe means extending from said at least one tank; and

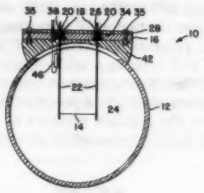
(e) valve means in said outlet pipe means for controlling fluid flow through said outlet pipe means; said system comprising:

(a) level sensor means located in said at least one tank for detecting the level of fluid therein;
(b) temperature sensor means located in said outlet pipe means for determining the temperature of fluid in said outlet pipe means;
(c) basic sediments and water sensor means located in said



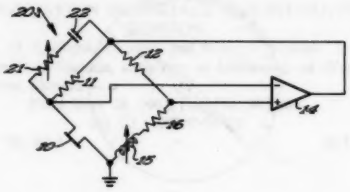
outlet pipe means for determining the purity of fluid in said outlet pipe means; and
(d) self-powered master control unit means operable on a real time basis and connected to said level, temperature and basic sediments and water sensor means and receiving signals therefrom so as to enable the monitoring of said tank battery on site.

4,523,461
HOT WIRE ANEMOMETER
Dennis W. Watkins, King County, Wash., assignor to Air Sensors, Inc., Seattle, Wash.
Filed May 2, 1983, Ser. No. 490,560
Int. Cl.³ G01F 1/68
U.S. Cl. 73—204 **11 Claims**



9. An electronic anemometer for measuring air mass flow in a conduit, comprising:
a length of temperature-dependent resistive wire;
a circuit board for holding at least a portion of the anemometer electronic circuitry;
a rigid support member, said circuit board being attached to said member and mountable on the exterior of the conduit; and
a pair of electrically conductive, resilient posts capable of withstanding the elevated operating temperatures encountered when the anemometer is operating, each of said posts having a wire-supporting end portion fixedly connected to said wire, said end portions being spaced apart and positionable in the conduit, and biased away from each other to hold said wire under tension, each of said posts further having a remote end portion extendable through an opening in the conduit wall and fixedly held by said support member, said remote end portions being electrically connected to the electronic circuitry.

4,523,462
CONSTANT TEMPERATURE ANEMOMETER HAVING AN ENHANCED FREQUENCY RESPONSE
Kenneth J. Kolodjski, Minneapolis, Minn., assignor to TSI Incorporated, St. Paul, Minn.
Filed May 16, 1983, Ser. No. 495,087
Int. Cl.³ G01F 1/68
U.S. Cl. 73—204 **7 Claims**



1. In a constant temperature anemometer of the type having bridge circuit means, including sensor element means in one leg thereof, and having feedback circuit means operatively connected to said bridge circuit means, the improvement for enhancing anemometer frequency response which comprises means connected in shunt across a leg of said bridge circuit means for providing a frequency dependent impedance of the leg shunted by said means.

4,523,463
ELECTRONIC AIR FILTERING APPARATUS
George H. Fathauer, Mesa, Ariz.; James M. Fowler, Jr., Houston, Tex.; Edward J. Rylicki, Powell, and Edwin E. Mason, Rockbridge, both of Ohio, assignors to Masco Corporation of Indiana, Taylor, Mich.
Division of Ser. No. 285,417, Jul. 22, 1981, Pat. No. 4,410,934. This application Aug. 12, 1983, Ser. No. 522,819
Int. Cl.³ G01F 1/68
U.S. Cl. 73—204 **3 Claims**

1. An air flow sensing probe for use with apparatus including air treating means installed adjacent an end of an air flow duct and electrical control means for control of said air treating means, comprising: sensing means for developing an electrical signal proportional to air flow and including a first thermistor element having lead wires extending therefrom and forming a first sensor element having an electrical characteristic changeable as a function of air flow velocity, a probe housing including an elongated tubular sensor element support portion, a plug inserted into one end of said support portion and forming support means supporting said first sensor element to project through said lead wires from said one end of said support portion, said housing further including a base portion at the opposite end of said tubular support portion, said tubular portion with said first sensor element supported therein being arranged for insertion through an opening in a wall of said duct to engage said base portion with an outer surface portion of

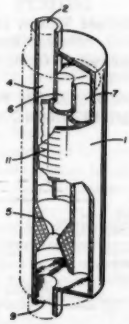
said wall about said opening and support said first sensor element in the path of air flow in said duct at a position spaced inwardly a substantial distance from the inner surface of said duct wall and also spaced a substantial distance from said end of said duct and from said air treating means, said sensing means further including a second thermistor element forming a second sensor element having characteristics like those of the first sensor element, said second sensor element being supported at a protected position within said elongated tubular portion to be insensitive to air flow velocity within said duct, a cable connected to said base portion at said opposite end of said probe housing for connection of said sensing means to said electrical control means, mating connectors supported within said plug and connected to said lead wires, and wires within said tubular portion connected to said cable and to said second sensor element and through said mating connectors to said first sensor element with said first and second sensor elements being connected in a bridge configuration to produce an electrical signal which changes as a function of air flow velocity and which is substantially independent of changes in variables other than air flow velocity.

4,523,464

FLOWMETER WITH NO MOVING PARTS

David R. Pedersen, and Curtis M. Tong, both of Antioch, Calif., assignors to The Dow Chemical Company, Midland, Mich.

Filed Oct. 13, 1983, Ser. No. 541,499
Int. Cl.[3] G01F *1/20*
U.S. Cl. 73—216 9 Claims



1. A device for measuring the flow of liquid through a pipe or conduit normally partially full of the liquid comprising:

(a) a housing;

(b) a liquid inlet into the housing communicating with the upper portion of a first, generally vertically-disposed chamber, said inlet being connected to a pipe or conduit normally partially full of liquid;

(c) said first chamber communicating in its lower region with a constricted orifice communicating in turn wit a liquid outlet;

(d) said first chamber also communicating with a second chamber in a region above the orifice;

(e) said orifice and first and second chambers being sized and disposed so that the height of liquid in the second chamber is proportional to the rate of flow of the liquid through the pipe or conduit;

(f) said second chamber having at least one generally vertical section below the point at which theliquid inlet communicates with the first chamber but above the orifice, said section constituting a flow measurement zone;

(g) said second chamber communicating with an outlet from the housing at a point above the flow measurement zone;

(h) a means for determining the height of the liquid in the flow measurement zone; and

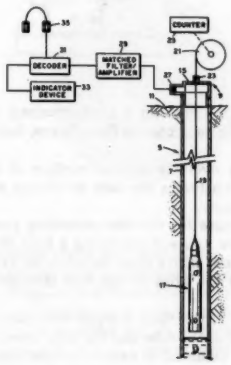
(i) a means for relating the height of liquid in the flow measurment zone to the liquid flow rate through the pipe or conduit.

4,523,465

WIRELESS REMOTE LIQUID LEVEL DETECTOR AND INDICATOR FOR WELL TESTING

George E. Fasching, Morgantown, W. Va.; Donald M. Evans, Point Marion, Pa., and John H. Ernest, Morgantown, W. Va., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jan. 9, 1984, Ser. No. 569,087
Int. Cl.[3] G01F *23/22;* G08B *21/00*
U.S. Cl. 73—290 V 5 Claims



1. A liquid level measuring system for use in measuring the liquid level in a well including a bore hole extending from a well head at the earth's surface to a subterranean liquid reservoir and a casing in said bore hole, comprising:

an electrically conductive sensing probe housing adapted to be lowered into said well, said housing including a sealed chamber;

a conductivity sensing probe insulatably carried by said housing to sense electrical conduction through said liquid between said probe and said housing when said probe housing is lowered to the liquid level in said well;

a pulse generating means disposed in said sealed chamber for generating excitation pulses of a preselected pattern;

a gate circuit means disposed in said sealed chamber and responsive to conduction through said sensing probe for gating said excitation pulses to an output thereof at the onset of conduction through said probe;

an acoustic transmitter means carried by said housing for generating acoustic signals which propagate up said well in response to said excitation pulses;

an acoustic receiver means disposed at said well head for receiving said acoustic signals and generating an indicating signal in response to the reception of said acoustic signals; and

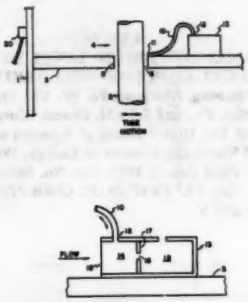
a wire line reel assembly including a footage indicator and having a wire line attached to said sensing probe housing for lowering said sensing probe housing into said well to provide a depth indication of said liquid level at the indication of reception of said acoustic signal by said receiving means.

4,523,466

ACOUSTIC MONITORING OF TUBE VIBRATION

Barry T. Lubin, Hartford, and James P. Thompson, Suffield, both of Conn., assignors to Combustion Engineering, Inc., Windsor, Conn.

Filed Oct. 31, 1983, Ser. No. 546,773
Int. Cl.³ G05D *19/00*
U.S. Cl. 73—579 **5 Claims**



1. A system for detecting a predetermined frequency of vibration by a tube subjected to fluid forces, including,

a tube,

a fluid flowing over the external surface of the tube at a velocity which forces the tube to vibrate at a predetermined frequency,

a support structure for the tube extending generally transverse the tube axis and providing a hole through which the tube extends with a space between the external wall of the tube and the sides of the hole through the support structure,

a leakage flow of the fluid through the space between the external wall of the tube and the hole sides,

a tube-conduit mounted to extend its first open end to the leakage space and receiving the fluid pressure variations through the first opening and up the length of the tube-conduit,

an acoustic generator communicating with the second end of the tube-conduit to receive the fluid pressure variations and transduce the pressure variations into an acoustic signal output, and

a detector-receiver mounted external the tube environment and positioned to receive the acoustic signal as representative of the predetermined vibration frequency of the tube.

4,523,467

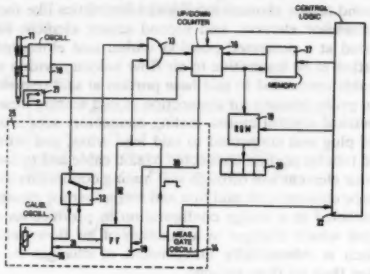
METHOD AND APPARATUS FOR RESONANT SENSING DEVICE

Rolf Diederichs, Erftstadt-Blisesheim, and Klaus Volkmann, Bergisch-Gladbach, both of Fed. Rep. of Germany, assignors to Krautkramer-Branson, Inc., Lewistown, Pa.

Filed Jun. 6, 1984, Ser. No. 617,921
Claims priority, application Fed. Rep. of Germany, Aug. 17, 1983, 3329690
Int. Cl.³ G01N *29/00*
U.S. Cl. 73—573 **5 Claims**

1. A method for testing the hardness of a workpiece by the contact impedance method using an oscillating rod excited at its natural resonant frequency wherein the oscillations of the not-constrained rod are counted during a first time interval and the oscillations of the constrained rod, when in forced contact with the workpiece, are counted during a second time interval having the same duration as said first interval and the difference in counts is converted to a corresponding hardness value, the improvement comprising:

counting the oscillations of said rod when coupled to the workpiece beginning with the start of said second time interval only until the difference between the count during said second time interval and the count of the oscillations of the not-constrained rod during said first time interval becomes zero, and



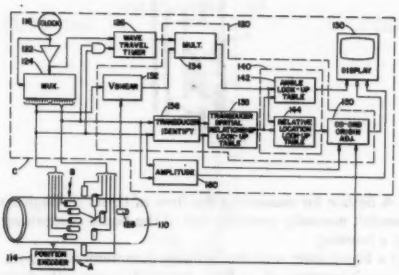
during the remainder of said second time interval counting the number of oscillations obtained from an adjustable frequency oscillator.

4,523,468

PHASED ARRAY INSPECTION OF CYLINDRICAL OBJECTS

Thomas Derkacs, Mayfield Village; Istvan M. Matay, North Royalton; Stephan D. Murphy, East Cleveland, and John Touhalisky, Eastlake, all of Ohio, assignors to TRW Inc., Cleveland, Ohio

Filed Oct. 3, 1983, Ser. No. 538,627
Int. Cl.³ G01N *29/04*
U.S. Cl. 73—598 **16 Claims**



1. A method of ultrasonically locating defects in an examined object with a first transducer array including a plurality of transducers for generating ultrasonic shear waves along the examined object in a first transmission direction and for receiving reflected ultrasonic wave components from the examined object and a second transducer array for transmitting ultrasonic shear waves along the examined object in a second transmission direction and receiving reflected ultrasonic wave components from the examined object, the method comprising:

(a) actuating at least one transducer of the first and second arrays to transmit an ultrasonic shear wave along the examined object and causing the remaining transducers of the first and second arrays to assume a reflected component receiving mode;

(b) measuring an ultrasonic wave travel time between transmission of an ultrasonic wave by a transmitting transducer and receipt of a reflected component by a receiving transducer;

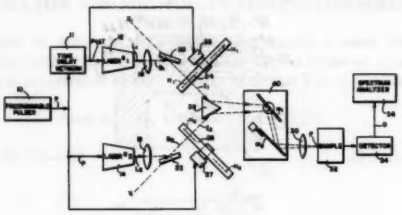
(c) determining the spatial relationship between the transmitting transducer and the receiving transducer;
(d) determining the location of the defect flaw from the measured travel time and the relative spatial relationship of the transmitting and receiving transducers; and,
(e) repeating steps (a)–(d) with other transducers of the first and second arrays.

4,523,469

LASER GENERATION OF ULTRASONIC WAVEFORM RECONSTRUCTIONS

William R. Scott, Doylestown, Pa., and Charles S. Ih, Newark, Del., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jan. 19, 1983, Ser. No. 459,073
Int. Cl.³ G01N *29/04*
U.S. Cl. 73—603 **7 Claims**



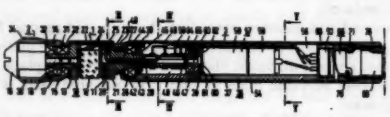
1. Apparatus for nondestructive testing of a material by ultrasonic signal reconstructions comprising:
a signal generator for providing pulses of programmable width, rise time, amplitude and repetition rate;
first laser means connected to receive the pulse for providing a first holographic beam;
second laser means connected to receive the pulses for providing a second holographic beam, the first beam being delayed a predetermined increment of time after the second beam;
focus means positioned to receive the first and second beams for producing a coincident image of the first and second beams on the surface of the material; and
output means positioned to detect the ultrasonic signal eminating from the material in response to the image and provide a frequency spectrum of the signal indicative of the defect geometry of the material.

4,523,470

PROBE FOR THE NONDESTRUCTIVE TESTING OF CYLINDRICAL CAVITIES, ESPECIALLY OF STEAM GENERATOR TUBES

Thomas Müller; Günter Lehner, both of Erlangen, and Georg Gugel, Kalchreuth, all of Fed. Rep. of Germany, assignors to Kraftwerk Union Aktiengesellschaft, Mülheim, Fed. Rep. of Germany

Filed Jan. 28, 1983, Ser. No. 462,047
Claims priority, application Fed. Rep. of Germany, Jan. 29, 1982, 3202931; Jan. 29, 1982, 3202877; Jan. 29, 1982, 8202241[U]; Jan. 29, 1982, 3202977; Jan. 29, 1982, 8202128[U]
Int. Cl.³ G01N *29/04*
U.S. Cl. 73—623 **10 Claims**



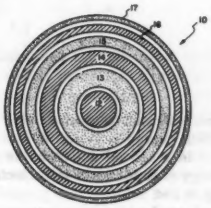
1. Probe for the nondestructive testing of cylindrical cavities, comprising a rotatable testing head, an outwardly cylindrical housing supporting said testing head, a motor disposed in said housing for driving said testing head, a shell body being surrounded by said housing and being in the form of a semi-cylindrical part with a relatively smaller diameter portion in vicinity of said motor, a tube sealing said shell body in vicinity of said motor, a shaft for said motor, a housing for said motor having a stub surrounding said motor shaft, and a cross piece extending transversely to said cylindrical housing being integral with said shell body, said cross piece having a cylindrical bore hole formed therein, and said stub being inserted into said bore hole for securing said motor in a definite position.

4,523,471

COMPOSITE TRANSDUCER STRUCTURE

Paul P. Lee, Littleton, Colo., assignor to Biosound, Inc., Indianapolis, Ind.

Filed Sep. 28, 1982, Ser. No. 425,216
Int. Cl.³ G01N *29/00*
U.S. Cl. 73—626 **5 Claims**



1. An ultrasonic transducer comprising:
means for transmitting an ultrasonic energy pulse beam into an object region, said transmitting means including a first plurality of transducer elements, each of which is constructed of a material which is sensitive to ultrasonic energy and is higher in transmit sensitivity than receive sensitivity;
means for receiving an echo pulse beam produced by said transmitting means and reflected from said object region, said receiving means including a second plurality of transducer elements, each of which is constructed of a material which is sensitive to ultrasonic energy and is higher in receive sensitivity than transmit sensitivity;
means mounting transducer elements for the first plurality alternately with and laterally arranged relative to the transducer elements of the second plurality; and
said transducer elements of said first plurality of transducer elements being fabricated of a material which is about fifty-three percent lead zirconate and about forty-seven percent lead titinate doped with lanthanum oxide and said transducer elements of said second plurality of transducer elements is fabricated of a material which is about sixty-five percent lead zirconate and about thirty-five percent lead titinate doped with niobium oxide.

4,523,472

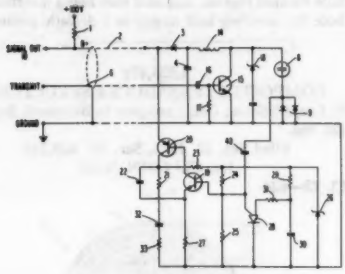
ULTRASONIC TRANSCEIVER CIRCUIT

Frederick K. Blades, Boulder, Colo., assignor to PureCycle Corporation

Division of Ser. No. 165,253, Jul. 2, 1980, Pat. No. 4,400,976. This application Aug. 8, 1983, Ser. No. 521,444
Int. Cl.³ G01N *29/00*
U.S. Cl. 73—632 **13 Claims**

1. A transceiver comprising:
receiver means for receiving a signal;
means for emitting an ultrasonic pulse in response to a received signal;
electrostatic transducer means for detecting a reflected ultrasonic pulse;

amplifier means for amplifying a detected pulse;
transmitter means for transmitting the amplified pulse;
means adapted to be connected to a power supply line for storing energy;
means for disconnecting said means for storing energy from said power supply line such that said stored energy may be supplied in a substantially noise-free manner to said electrostatic transducer for biasing said electrostatic transducer for detecting said pulse;



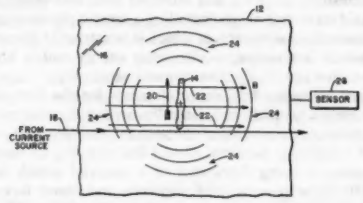
means for operating said transceiver in a first quiescent mode during which energy is stored in said means for storing energy and in a second active mode during which said stored energy is supplied to said electrostatic transducer for biasing it; and
means for making the transition between said first and second modes of operation upon receipt of said signal by receiver means.

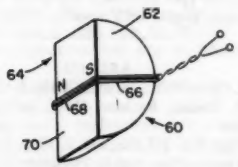
4,523,473

MAGNETO-ELASTIC MATERIAL DEFECT DETECTOR

Jacques R. Chamuel, Framingham, Mass., assignor to The Charles Stark Draper Laboratory, Inc., Cambridge, Mass.

Filed Aug. 8, 1983, Ser. No. 521,327
Int. Cl.³ G01N *29/04*
U.S. Cl. 73—643 **26 Claims**





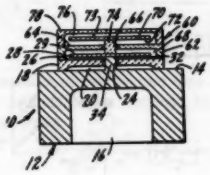
1. Apparatus for dark-field electromagnetic-acoustic detection of defects in a conductive material, comprising:
means for creating an electric current along a path in said material that diverts from said path in the vicinity of any defect present in said material along said path;
means for generating an acoustic wave within said material only in response to said current that diverts from said path in the vicinity of a material defect in such a way that the acoustic wave originates exclusively in the vicinity of the material defect but not in regions of the material free from defects; and
means for detecting the acoustic wave to provide an indication of the presence of said defect.

4,523,474

CAPACITIVE PRESSURE SENSOR

Vance d'A Browne, Arlington Heights, and George E. Kochanek, Glen Ellyn, both of Ill., assignors to Borg-Warner Corporation, Chicago, Ill.

Filed Aug. 12, 1983, Ser. No. 522,776
Int. Cl.³ G01L *7/08, 9/12;* H01G *7/00*
U.S. Cl. 73—724 **2 Claims**



2. A capacitive sensor for use in the measurement of pressure in a fluid medium, comprising:
a flexible diaphragm defining a reference surface, side walls and a pressure chamber, which reference surface is deflectable in response to a force acting in said pressure chamber;
a first fixed plate having outer leg portions or an annular ring and defining a port and an outer surface which outer leg portions are mounted on said side walls at said reference surface;
said first fixed plate and said diaphragm reference surface cooperating to define a cavity to accommodate any deformation of the diaphragm reference surface;
a second fixed plate having second plate outer leg portions or second plate annular ring to contact said first fixed plate outer leg portions or annular ring, which first fixed plate and second fixed plate cooperate to define a second cavity, and further said second fixed plate defining a rod port and a top surface;
a final fixed plate having an annular ring to contact said second fixed plate outer leg portion or annular ring which final fixed plate and said second fixed plate cooperate to define a sealed cavity therebetween;
a first movable plate positioned and operable in said second cavity and having a wall with a lower surface substantially parallel with said first fixed plate outer surface;
a second movable plate positioned and operable in said sealed cavity and having a wall with a bottom surface substantially parallel with said second plate top surface;
a rod member extending through said first fixed plate port to contact both said first movable plate and said flexible diaphragm reference surface and operable to displace said first movable plate as the diaphragm reference surface is displaced;
a second rod member extending through said second fixed plate rod port to contact both said first movable plate and said second movable plate and operable to displace said second movable plate as said first movable plate is displaced;
a capacitive member with electrode means including a first electrode affixed to both said first fixed plate outer surface and a similar first electrode positioned on said second fixed plate top surface, and a second electrode affixed to

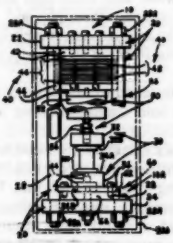
said first movable plate lower surface and a similar second electrode affixed to said second movable plate bottom surface, which first and second electrode pairs respectively, cooperate to effect a change in capacitance of the capacitive member as the diaphragm reference surface deflects to move said first and second movable plates.

4,523,475

SIMULTANEOUS INCREMENTAL STRAIN/INCREMENTAL TEMPERATURE ANALOG DEVICE FOR, AND METHOD, OF TESTING FOR STRESS RESPONSE

Kenneth W. Bills, Jr., Sacramento, and Gerald J. Svob, Fair Oaks, both of Calif., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Sep. 19, 1983, Ser. No. 533,330
Int. Cl.³ G01N *3/00*
U.S. Cl. 73—781 **22 Claims**



1. A simultaneous incremental strain/incremental temperature analog device for use with a test specimen, and for use with a means for subjecting said analog device, with said test specimen mounted therein, to a preselected temperature, said analog device comprising:

a. a frame assembly, said frame assembly including a top support plate-like member, a bottom support plate-like member, means, interposed between said top and bottom support plate-like members, for maintaining said support plate-like members in an aligned, spaced-apart, parallel relationship;

b. means, operably associated with and disposed within said frame assembly, for mounting said test specimen;

c. means, operably associated with and disposed within said frame assembly, for permitting the application of a thermally induced axial compressive or tensile load to said test specimen when said specimen is mounted, whereby said mounted specimen can be loaded, stressed, and strained; and

d. means, operably associated with said test specimen when said specimen is mounted, for measuring said thermally induced axial compressive or tensile load applied to said mounted specimen;

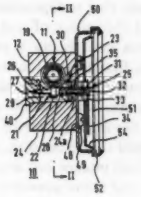
whereby, when said test specimen is mounted in said analog device, and when said analog device and said test specimen mounted therein are subjected to said preselected temperature, the stress response of said mounted test specimen to the thermally induced axial compressive or tensile load conditions caused by said preselected temperature, can be ascertained and evaluated.

4,523,476

PRESSURE TRANSDUCER

Donald A. Larner, Kingston-Upon-Thames, England, assignor to Fluid Devices Limited, England

Filed Mar. 1, 1984, Ser. No. 585,143
Claims priority, application United Kingdom, Mar. 3, 1983, 8305927
Int. Cl.³ G01L *7/16*
U.S. Cl. 73—744 **9 Claims**



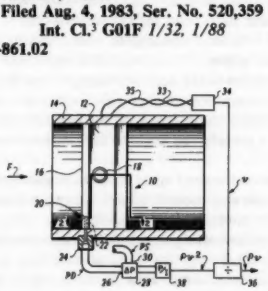
1. A pressure transducer comprising a housing provided with a cylindrical passage therein and a pressure connection at one end of the passage, a substantially cylindrical member arranged in said passage so as to be longitudinally slidable therein, with sealing means between said member and the passage, so that pressure applied at said one end of the passage via said pressure connection biases said member away therefrom, a spring for biasing said member towards said one end against said pressure, and rack and pinion means within the housing for converting linear displacement of said member into rotary displacement of the pinion, the rack being formed by grooves in the member itself, characterised in that the pressure transducer is a differential pressure transducer having another pressure connection at the other end of the passage, so that a possibly different pressure applied at said other end of the passage via said other pressure connection biases said member away from said other end, and in that sealing means between said member and the passage is formed by virtue of a closely fitting, yet freely sliding, hard-surface-to-hard-surface engagement between a substantial (total) hard surface area at any one time of said passage and a substantial (total) hard surface area at any one time of said member, including regions of the surface area of said member intermediate mutually adjacent ones of said grooves.

4,523,477

PLANAR-MEASURING VORTEX-SHEDDING MASS FLOWMETER

Richard W. Miller, Foxboro, Mass., assignor to The Foxboro Company, Foxboro, Mass.

Filed Aug. 4, 1983, Ser. No. 520,359
Int. Cl.³ G01F *1/32, 1/88*
U.S. Cl. 73—861.02 **12 Claims**



1. A vortex-shedding flowmetering apparatus comprising:
a conduit adapted for passing therethrough a flowing fluid;

a vortex-shedding element being fixedly mounted in said conduit and having a surface for producing vortices;

a measuring plane that includes said surface and is disposed transversely to the direction of motion of said flowing fluid;

vortex-responsive means for generating a velocity signal that is representative of the shedding rate of said vortices and is thereby proportional to the volumetric flow rate of said fluid in said measuring plane;

sensor means for detecting in said measuring plane a moving fluid characteristic that is dependent upon the product of fluid density and the square of said volumetric flow rate; said sensor means comprising a pitot device which includes at least a first intake located on said surface for sensing fluid dynamic pressure, a second intake for sensing fluid static pressure, said second intake being disposed substantially at the intersection of said measuring plane with the inner wall of the conduit, and means coupled to said first and second intakes and arranged to be responsive to said dynamic and static pressures for producing a sensor signal corresponding to said moving fluid characteristic; and

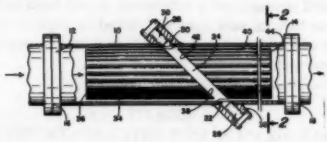
means for receiving both said sensor and velocity signals and combining these signals in accordance with a prescribed relationship so as to produce a flow signal proportional to the rate of mass flow of the fluid passing through the conduit.

4,523,478

SONIC FLOW METER HAVING IMPROVED FLOW STRAIGHTENERS

Ellis M. Zacharias, Jr., Tulsa, Okla., assignor to Nusonics, Inc., Tulsa, Okla.

Filed Aug. 18, 1983, Ser. No. 524,375
Int. Cl.³ G01F 1/66
U.S. Cl. 73—861.28 **13 Claims**



1. A sonic flowmeter comprising:

a conduit having an inlet end and an outlet end, and providing a linear fluid flow path therebetween;

a first and a second opening in said conduit, the openings being in a plane of the conduit longitudinal axis and on opposite sides of the conduit, the openings being displaced in an upstream-downstream relationship providing a sonic path through the interior of the conduit, the sonic path being at a preselected angle to the conduit linear fluid flow path;

first and second spaced apart transducer elements positioned to transmit and receive sound energy traveling through fluid as it traverses said conduit;

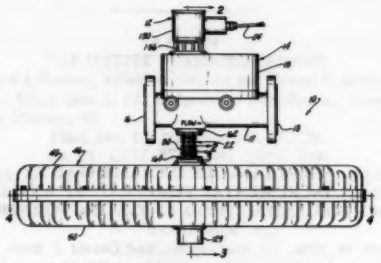
an upstream flow straightener within said conduit fluid flow path for separating the fluid stream into a plurality of reduced-crossectional area streams, each providing a separate linear fluid flow path, the flow straightener having a forward end and rearward end, the rearward end being contiguous to and in substantial conformity with said sonic path.

4,523,479

FLUID FLOW MEASURING DEVICE

Horace J. Johnson, Port Townsend, Wash., assignor to Cadillac Meter Company, Port Townsend, Wash.

Filed Aug. 22, 1983, Ser. No. 525,053
Int. Cl.³ G01F 1/78
U.S. Cl. 73—861.35 **16 Claims**



1. A meter for providing to a readout device a signal proportional to the mass flow of a fluid passing therethrough comprising:

a turbine housing having a fluid inlet and a fluid outlet,

a turbine in said turbine housing including a driving impeller interposed between said fluid inlet and said fluid outlet whereby fluid passing through said turbine imparts a driving torque to said driving impeller,

a balancing housing forming an internal cavity containing a damping fluid,

an impeller shaft fastened to said driving impeller and rotatable therewith, said shaft extending into said balancing housing cavity,

a balancing impeller rotatably mounted within said damping fluid in said cavity and fastened to said impeller shaft such that said driving impeller and said balancing impeller rotate simultaneously, said balancing impeller causing pumping of said damping fluid resulting in a resisting torque which is proportional to the speed of rotation of said driving impeller, and

pickup means for sensing said rotation and for providing a signal to said readout device, characterized in that the size and configurations of said turbine and said balancing impeller and the characteristics of said damping fluid are so proportioned and related to each other that the tangential speed of the outermost radial portion of said driving impeller does not exceed 0.007 times the velocity of fluid passing through said driving turbine, whereby the rate of rotation of said impellers and said impeller shaft and said signal to said readout device are closely proportional to said mass flow rate of said fluid.

4,523,480

MASS FLOW ROTAMETER

Kiyoshi Inoue, Tokyo, Japan, assignor to Inoue-Japax Research Incorporated, Yokohama, Japan

Continuation of Ser. No. 345,541, Feb. 3, 1982, abandoned. This application Jun. 8, 1984, Ser. No. 618,757
Claims priority, application Japan, Feb. 5, 1981, 56-16536; Nov. 9, 1981, 56-178458; Nov. 18, 1981, 56-183663
Int. Cl.³ G01F 1/24
U.S. Cl. 73—861.56 **3 Claims**

1. A device for measuring mass flow rate of a fluid, comprising:

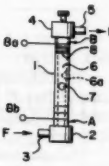
an upright tubular housing having a cylindrical out periphery and an upwardly diverging tapered frustoconical flow chamber for accommodating a fluid;

an inlet fitting at a lower end of said housing for introducing said fluid to said chamber at a lower end thereof;

an outlet fitting at an upper end of said housing for discharging fluid from an upper end of said flow chamber whereby

said fluid flows through said flow chamber vertically upward;

a fluid-responsive solid member constituted by a high-magnetic-permeability ferrite spherical ball coated with a uniform layer of at least one substance selected from the group which consists of synthetic resin, ceramic and carbon, said member being disposed movably within said flow chamber and propellable upwardly against gravity by the upwardly flowing fluid to a level substantially linearly dependent on the rate of flow of said fluid through said flow chamber;



a multi-turn electrical coil on said cylindrical periphery of said housing and having an interturn pitch progressively decreasing from said lower end of said housing to said upper end thereof;

a periodic power supply having a high frequency output connected across said coil; and

circuit means responsive to the effective inductance of said coil coupled thereto for indicating the rate of flow of said fluid through said chamber.

4,523,481

MEASUREMENT UNIT FOR DETERMINING GAS FLOW THROUGH A CONDUIT AND MEASURING MEANS DESIGNED TO BE INCLUDED IN SUCH A MEASURING UNIT

Gunnar Steen, Tomelilla, Sweden, assignor to Stifab AB, Jonkoping, Sweden

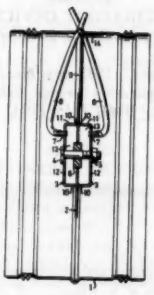
PCT No. PCT/SE83/00155, § 371 Date Nov. 29, 1983, § 102(e) Date Nov. 29, 1983, PCT Pub. No. WO83/03896, PCT Pub. Date Nov. 10, 1983

PCT Filed Apr. 22, 1983, Ser. No. 558,417

Claims priority, application Sweden, Apr. 23, 1982, 8202562

Int. Cl.³ G01F *1/42*

U.S. Cl. 73—861.61 **10 Claims**



10. Measuring means designed to be placed in a fluid flow in a conduit or a pipe, for measuring pressure differential over the means, characterized in that the means comprises a flat, circular disc (2) designed to be disposed transversely to the directional flow and that on each side of the disc (2) there is arranged, coaxially to the disc, a rotationally symmetrical pressure measurement box (3), the lateral wall (11) of which pointing towards the disc being arranged with its edge portion in close proximity to the surface of the disc, between said edge portion and the surface there being aperture means (10, 10') through which a pressure measurement chamber (13) inside the box and defined by the box wall (11, 12) and the disc surface is in communication with the space in close proximity to the disc but outside the lateral wall (11) of the box, and that in the wall of each box (3) there is a pressure lead-through means (7) to the portion of which outside the box a pressure lead-off line (8) can be connected.

4,523,482

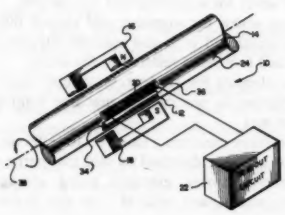
LIGHTWEIGHT TORQUEMETER AND TORQUE-MEASURING METHOD

Sarkis Barkhoudarian, Canoga Park, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Sep. 2, 1983, Ser. No. 528,915

Int. Cl.³ G01L *3/10*

U.S. Cl. 73—862.36 **20 Claims**



1. A method for measuring levels of torque in a rotating member comprising the steps of:

forming onto said rotating member a magnetostrictive element comprising a core constructed from material of low magnetic coercivity and a jacket about said core constructed from material of high magnetic coercivity;

resetting the magnetic polarity of said core from a triggered state wherein said core polarity is unidirectional with respect to the magnetic polarity of said jacket to a reset state wherein said core polarity is oppositely directed with respect to said jacket polarity;

triggering an avalanche Barkhausen reversal of said core polarity from said reset state to said triggered state;

generating a signal responsive to said avalanche Barkhausen reversal; and

correlating said responsive signal to an indication of the level of torque in said rotating member.

20. An apparatus for measuring levels of torque in a rotating member comprising:

a magnetostrictive element formed onto said member capable of producing avalanche Barkhasuen reversals;

means for successively triggering avalanche Barkhausen reversals in said magnetostrictive element and for resetting said magnetostrictive element after each reversal;

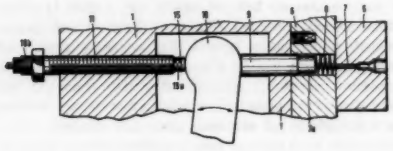
means for generating a signal responsive to said avalanche Barkhausen reversals; and

means for correlating said responsive signal to an indication of the level of torque in said member.

4,523,483
PRESS APPARATUS FOR DETECTING A FORCE OCCURRING BETWEEN TWO OPPOSITELY MOVABLE MACHINE PARTS

Klaus Brankamp, Sperberweg 10,, 4006 Erkrath 1, and Heinz B. Bongartz, Düsseldorf, both of Fed. Rep. of Germany, assignors to Klaus Brankamp, Erkrath 1, Fed. Rep. of Germany

Filed May 10, 1983, Ser. No. 493,371
Claims priority, application Fed. Rep. of Germany, Nov. 29, 1982, 3244171
Int. Cl.³ G01L 5/00
U.S. Cl. 73—862.54 8 Claims



1. A cold-solid deformation press in which, for monitoring the production process thereof, a force which occurs between two machine parts which are movable relative to one another is detected, said press comprising:

a machine support;

a tool including a punch part and a matrix part, as well as an ejector pin;

an ejector lever for actuating said ejector pin;

an adjusting screw for adjusting said ejector pin;

a carriage associated with said machine support for moving one of said tool parts relative to the other;

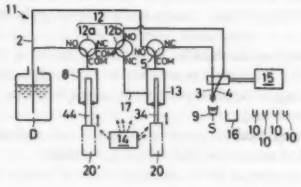
a machine element for supporting at least one of said tool parts relative to one of said machine support and said carriage; and

at least two force-measuring elements for effecting said force detection of force absorbed by said tool parts; with one of said force-measuring elements being arranged in said adjusting screw, and with at least one force-measuring element being arranged in said machine element.

4,523,484
DILUTION PIPETTER

Toshimi Kadota, Uji; Jugoro Suzuki, and Shigeki Matsui, both of Kyoto, all of Japan, assignors to Shimadzu Corporation, Kyoto, Japan

Filed Sep. 26, 1983, Ser. No. 535,671
Int. Cl.³ G01N 1/10; B01L 3/02
U.S. Cl. 73—864.12 8 Claims

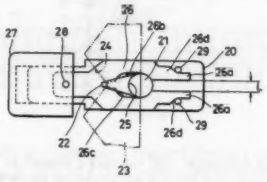


1. A dilution pipetter comprising a diluent sucking probe, a sample probe for sucking and discharging a liquid sample, a diluent discharging probe disposed adjacent to the sample probe, a plunger pump of relatively small plunger diameter communicating selectively with said diluent sucking probe or said sample probe by a first switching means, a plunger pump of relatively large plunger diameter, and a second switching means which selectively allows the plunger pump of large diameter to communicate with the diluent sucking probe, the diluent discharging probe, or the sample probe by way of the plunger pump of small diameter.

4,523,485
CROSS-ARM MECHANISM IN A PUSHBUTTON TUNER

Takao Chaki, and Mamoru Mogi, both of Tokyo, Japan, assignors to Clarion Co., Ltd., Tokyo, Japan

Filed Dec. 10, 1982, Ser. No. 448,557
Claims priority, application Japan, Dec. 14, 1981, 56-200083; Dec. 15, 1981, 56-185697[U]; Dec. 16, 1981, 56-186296[U]
Int. Cl.³ H03J 5/12
U.S. Cl. 74—10.33 6 Claims



1. Cross arm mechanism in a pushbutton tuner which comprises:

a setting plate pivotally mounted on a cross arm of said pushbutton tuner;

a plate spring disposed on said cross arm so as to be able to hold said setting plate from both sides;

a pushbutton provided at one end of said cross arm and engaged with said plate spring;

an urging protuberance provided at one end of said setting plate for engagement with a memory slide of said pushbutton tuner;

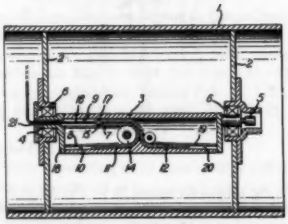
said plate spring being opened at one end thereof nearer to the front end of said cross arm and movable simultaneously with said pushbutton along said cross arm in the length direction of said cross arm when said pushbutton is pushed in; and

tightening protuberances provided at the front end of said cross arm for narrowing the distance between the opened ends of said plate spring upon advancement of said plate spring to thereby tighten and fix said setting plate.

4,523,486
VIBRATORY DEVICE

Alfredo Bueno, Sao Paulo, Brazil, assignor to Dynapac Maskin AB, Solna, Sweden

Filed Feb. 7, 1983, Ser. No. 464,465
Claims priority, application Sweden, Feb. 15, 1982, 8200893
Int. Cl.³ B06B 1/16; E01C 19/28
U.S. Cl. 74—87 13 Claims



1. Apparatus for continuous adjustability of the vibration amplitude of a vibration generator, comprising a tubular shaft rotatably supportable about an axis by a member to be vi-

brated; at least one eccentric mass element; guide means supported by the tubular shaft and having surfaces for supporting the eccentric mass element for movement therealong, the surfaces being substantially parallel to said axis and being oriented to cause at least a portion of the eccentric mass element to be urged by centrifugal force away from the axis of the tubular shaft along the surfaces when the shaft is rotating, and adjustment means coupled for moving the eccentric element along the surfaces to control the position of the eccentric element, wherein movement of said eccentric mass element along said surfaces changes the vibration amplitude of the rotating tubular shaft.

4,523,487

DEVICE FOR POSITIONING AND POSITION STABILIZING

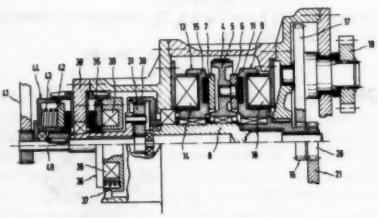
Ludwig Pietzsch, Karlsruhe; Harald Kauer, Ettlingen; Johannes Düren, Karlsruhe, and Hugo Kühn, Marxzell-Pfaffenrot, all of Fed. Rep. of Germany, assignors to IBP Pietzsch GmbH, Ettlingen, Fed. Rep. of Germany

Filed Aug. 16, 1983, Ser. No. 523,617

Claims priority, application Fed. Rep. of Germany, Aug. 3, 1983, 3328031

Int. Cl.³ F41G *5/24*

U.S. Cl. 74—378 **18 Claims**



1. A device for positioning and position stabilizing an inert mass, such as a barrelled weapon supported for sluing on a base, such as a vehicle body, comprising two driven portions adapted to be driven by one motor by way of a rotor each and a controllable friction clutch each so as to slue the mass selectively in one of its two sluing directions into a predetermined pivot position, characterized in that only a single rotor (**5**) is provided, in that the two friction clutches (**9,13**) are so arranged with respect to the rotor (**5**) that the rotor transmits equidirectional torques to the driven portions (**11,15**) of both friction clutches, and in that the driven portions (**11,15**) of the two friction clutches act on the inert mass by a separate power transmission each (**16–18,20–23**) one of which effects reversal of the direction of rotation.

4,523,488

SINGLE LEVER CONTROL DEVICE FOR MULTIPLE FUNCTIONS

Donald A. Ahrendt, Chicago Heights, Ill., assignor to Allis-Chalmers Corp., Milwaukee, Wis.

Filed Nov. 5, 1982, Ser. No. 439,363

Int. Cl.³ G05G *9/00*; E03B *7/07*

U.S. Cl. 74—471 XY **4 Claims**

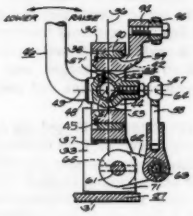
1. A single lever control device for operating two separate controls comprising:

a single upstanding support wall of predetermined thickness having laterally opposite sides and a radially inward facing cylindrical bearing surface extending axially between said sides defining a single cylindrical opening through said support wall generally transverse to said opposite sides,

a control member having a main part disposed within said single cylindrical opening, said main part having a radially outward facing cylindrical bearing surface in cooperative pivotal bearing engagement exclusively with said inward facing cylindrical bearing surface for rotation about a bearing axis transverse to said wall, said main part of said control member having radially inward facing surfaces defining a central opening through which said bearing axis passes,

a control lever including an upstanding hand grip portion at one side of said wall and a horizontal leg extending from the lower end of said hand grip portion and through and beyond said central opening,

pivot means within said central opening pivotally connecting an intermediate portion of said leg to said main part of said control member for pivotal movement about a pivot axis disposed transverse to said bearing axis and between



said opposite sides of said single support wall, said leg and control member pivoting relative to one another only about said pivot axis,

an arm on said main part of said control member extending from the side of said main part at said other side of said support wall,

a first control pivotally connected to said arm at a first point spaced from said bearing axis, said first control being actuated when said lever is pivoted about said bearing axis and

a second control pivotally connected to said leg of said control lever at a second point at said other side of said support wall and spaced from said first point, said second control being actuated when said lever is pivoted about said pivot axis.

4,523,489

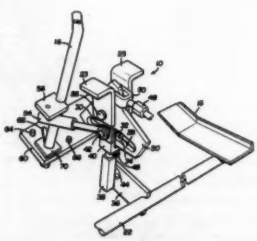
GROUND DRIVE CONTROL

Roger T. Gault, Wild Rose, Wis., assignor to Ingersoll Equipment Company, Winnecone, Wis.

Filed Jun. 7, 1982, Ser. No. 386,123

Int. Cl.³ G05G *11/00, 1/14*

U.S. Cl. 74—474 **1 Claim**



1. A ground drive control assembly for a machine having a transmission control means which is shiftable through positions corresponding to various drive modes including forward, reverse and neutral, said ground drive control assembly comprising:

a rotatable control lever operably connected to a rotatable

selector means for setting the direction of machine movement and a depressable foot pedal means operably connected to said selector means for controlling the speed of machine movement in a selected direction, said rotatable control lever including a stop pin extending therefrom which is movable into engagement with stop abutments when said control lever is rotated to a position corresponding to either forward or reverse directional control;

said rotatable selector means connected to said transmission control means and including a slot having directional positions for forward, neutral and reverse directional control, and pin means slidably movable within said slot;

said foot pedal means connected to said pin means by an actuating linkage, said actuating linkage including a first link which is secured to a member that is rotatable in response to depression of said foot pedal means, first universal joint means connecting one end of a second link to said first link for universal movement of said second link relative to said first link, said second link connected at its other end to said pin means, and spring means connected between said first link and said rotatable selector means;

said control lever connected to said pin means by a coupling element, second universal joint means connecting one end of said coupling element to said control lever for universal movement of said coupling element relative to said rotatable control lever, and said coupling element connected at its other end to said pin means; and

a movable joint being formed by the connection between said pin means, said other end of said coupling element, and said other end of said second link, said joint being shifted within said slot in response to rotation of said control lever to a selected directional position and thereafter, depression of said foot pedal means causing said selector means to rotate while said joint moves along a portion of said slot without affecting the position of said control lever.

4,523,490

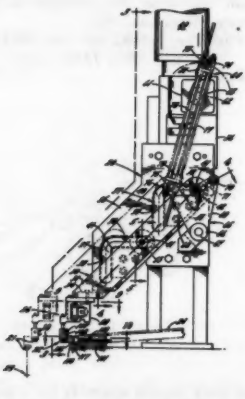
MACHINE FOR HANDLING PARTS

Paul H. Dixon, Belvidere, Ill., assignor to Dixon Automatic Tool, Inc., Rockford, Ill.

Division of Ser. No. 305,912, Sep. 28, 1981, Pat. No. 4,487,541. This application Jan. 20, 1984, Ser. No. 572,512

Int. Cl.[3] G05G *1/00*; F16B *7/10*

U.S. Cl. 74—582 **5 Claims**



1. The combination of, a driving member, a spaced driven member and mechanism for causing the driving member to move the driven member back and forth while allowing the driving member to yield in either direction relative to the driven member if the latter is stopped, said driving and driven members having inboard sides facing toward one another and having outboard sides facing away from one another, said mechanism comprising first and second side-by-side rods spanning the space between said members, each of said rods being movable back and forth relative to each of said members and each extending beyond the outboard side of each of said members, first and second stop means located between said members, said first stop means being secured rigidly to said first rod and slidably receiving said second rod, said second stop means being secured rigidly to said second rod and slidably receiving said first rod, first and second side-by-side springs telescoped over said first and second rods, respectively, and each compressed between said first and second stop means, said first and second stop means normally being pressed against the inboard side of said driving and driven members, respectively, by said springs, third stop means on one end portion of said first rod and normally engaging the outboard side of said driving member to limit movement of said driving member away from said driven member, and fourth stop means on the opposite end portion of said second rod and normally engaging the outboard side of said driven member to limit movement of said driven member away from said driving member.

4,523,491

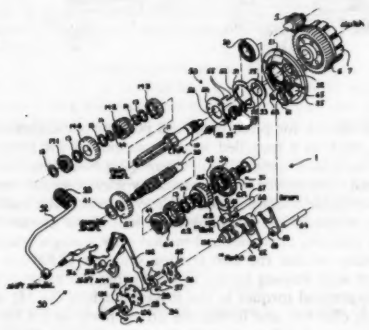
MOTORCYCLE TRANSMISSION FEATURING REVERSE GEAR

Fred M. Dittmann, Jr., Lake Zurich, Ill., assignor to Municipal Industries, Inc., Chicago, Ill.

Filed Jul. 9, 1982, Ser. No. 396,642

Int. Cl.[3] F16H *3/08*

U.S. Cl. 74—360 **26 Claims**



1. In a constant mesh gear train assembly for a motorcycle type engine having a main shaft and a countershaft with a plurality of alternate internally splined and freely rotating forward gears, the improvement which comprises in operative combination:

(a) a main shaft reverse gear having means for engagement with said main shaft to permit transfer of power between said main shaft and said main shaft reverse gear;

(b) a countershaft reverse gear mounted to freely rotate on said countershaft, disposed with its gear teeth spaced from the gear teeth of said main shaft reverse gear;

(c) said countershaft reverse gear having means for engagement with at least one adjacent gear mounted on said countershaft;

(d) said countershaft adjacent gear having means for engagement with said countershaft to permit transfer of power between said countershaft and said adjacent gear;

(e) means for selectively shifting said countershaft adjacent gear into engagement with said countershaft reverse gear;

(f) a reverse idler gear having means for maintaining the teeth thereof in continuous rotatable mesh with the teeth of both said main and countershaft reverse gears to trans-

fer power therebetween so that both said main and countershaft reverse gears rotate in the same direction; thereby providing reverse gearing throughout the full range of engine power.

4,523,492

PEDAL FOR A BICYCLE

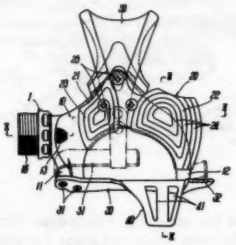
Keizo Shimano, Sakai, Japan, assignor to Shimano Industrial Company Limited, Osaka, Japan

Continuation of Ser. No. 333,170, Dec. 21, 1981, abandoned. This application Jan. 30, 1984, Ser. No. 574,945

Claims priority, application Japan, Dec. 28, 1980, 55-188819[U]

Int. Cl.³ G05G *1/14*

U.S. Cl. 74—594.4 **7 Claims**



1. A pedal for a bicycle for use with a cyclist's foot having bones therein known as metatarsi, phalanges, and tarsus said pedal comprising a pedal body having a pedal shaft, said pedal body having upper and lower surfaces, and having at said upper surface a main foot bearing surface said main foot bearing surface including upwardly projecting first and second foot bearing portions separated by a gap from one another and located to contact with all head portions of metatarsi of a cyclist's foot, each of said first and second foot bearing portions being located in the vicinity of an axis of said pedal shaft, said first and second foot bearing portions being located axially along said pedal shaft with said first foot bearing portion being axially closest to a base portion of said pedal shaft and said second foot bearing portion located axially outwardly of said pedal shaft relative to said first foot bearing portion, said second foot bearing portion extending rearwardly of said pedal body with respect to said first foot bearing portion, and at a rear side of said main foot bearing surface, an auxiliary foot bearing surface located to be contactable with only third through fifth metatarsi of a cyclist's foot at a side thereof of the tarsus when the head portion of all metatarsi are contacted by said main foot bearing surface.

4,523,493

TRANSMISSION GEAR FOR TRANSVERSE MOUNTING AND MOTOR VEHICLE WITH TRANSMISSION GEAR MOUNTED THEREIN

Heinz Weiß, Bensheim, Fed. Rep. of Germany, assignor to Deere & Company, Moline, Ill.

Filed Sep. 16, 1982, Ser. No. 419,091

Claims priority, application Fed. Rep. of Germany, Sep. 23, 1981, 3137805

Int. Cl.³ F16H *37/00, 37/08, 1/42, 57/02*

U.S. Cl. 74—695 **8 Claims**

2. In a vehicle having an in-line engine, a transverse gear box comprising:

a longitudinal engine-driven shaft;

an input shaft lying on a first transverse shaft line;

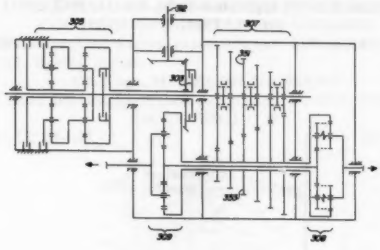
bevel gear means for coupling the engine-driven shaft to the input shaft;

an output shaft lying on a second transverse shaft line parallel to the first transverse shaft line;

a change-speed gear coupled between the input shaft and the output shaft;

an epicyclic range gear on one of the shaft lines, the epicyclic range gear driving the input shaft;

a pair of half-shafts on the second shaft line;



a differential gear between the output shaft and the pair of half-shafts; and

a hollow shaft driven by the bevel gear means, the hollow shaft driving the epicyclic range gear, the input shaft extending through the hollow shaft from the epicyclic range gear to the change-speed gear.

4,523,494

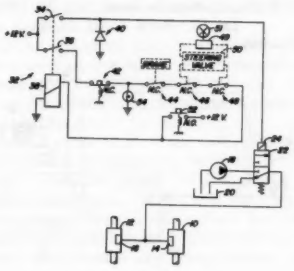
STEERING PRESSURE RESPONSIVE DIFFERENTIAL LOCK CONTROL SYSTEM

Gregory E. Sparks, Waterloo, and David A. Larson, Cedar Falls, both of Iowa, assignors to Deere & Company, Moline, Ill.

Filed Jun. 13, 1983, Ser. No. 503,967

Int. Cl.³ F16H *1/445*

U.S. Cl. 74—710.5 **5 Claims**



1. In a vehicle having an hydraulic steering system including a pilot pressure-operated steering valve, a differential and a steering-responsive differential lock control system, including locking means for locking and unlocking the differential, the improvement wherein the steering-responsive differential lock control system comprises:

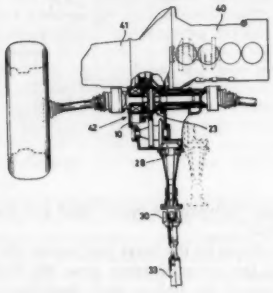
a pressure-operated normally closed switch mounted at an end of a housing of the steering valve and acted upon by a pilot pressure which acts upon an end of a valve spool of the steering valve, the pressure-operated switch open to unlock the differential when the pilot pressure exceeds a predetermined pressure.

4,523,495

DIFFERENTIAL ASSEMBLY FOR DISTRIBUTION OF TORQUE BETWEEN THE FRONT AND REAR AXLES OF AN AUTOMOTIVE VEHICLE

Silvio Sala, Milan, Italy, assignor to S.I.R.P. Studi Industriali Realizzazione Prototipi S.p.A., Moncalieri, Italy

Filed Mar. 29, 1983, Ser. No. 480,134
Claims priority, application Italy, Jun. 11, 1982, 21821 A/82
Int. Cl.³ F16H *1/42, 37/08*
U.S. Cl. 74—714 3 Claims



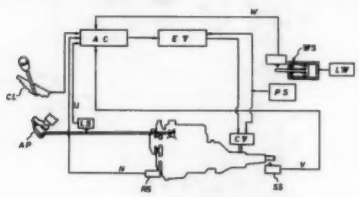
1. A differential assembly for the distribution of drive between a first differential of a first axle and a second differential of a second axle, comprising a crown wheel (**10**) in driving engagement with a gearbox output wheel (**13**), cylindrical spur gears (**16, 17**) rotatably mounted on said crown wheel, said spur gears meshing with each other and each meshing with one of two coaxial spur wheels (**19, 20**), one of said spur wheels being connected with the first differential and the second spur wheel being connected with the second differential.

4,523,496

AUTOMATIC CONTROLLING METHOD OF TRANSMISSION

Takao Fukunaga, Hirakata, Japan, assignor to Kabushiki Kaisha Daikin Seisakusho, Osaka, Japan

Filed Oct. 19, 1982, Ser. No. 435,246
Claims priority, application Japan, Oct. 30, 1981, 56-174727
Int. Cl.³ B60K *41/08, 28/00*
U.S. Cl. 74—866 4 Claims



1. A method of automatically controlling the transmission ratio and gear shifting operation of a stepped transmission in a vehicle, where engine power is transmitted to the clutch and the driving wheels via said stepped transmission, said gear shifting operation being effected in dependence of vehicle speed, engine load and engine speed as control factors, comprising:

inputting into a comparator circuit a ratio of the vehicle speed to the engine load as well as a signal corresponding to the loaded weight of the vehicle, for automatically controlling the transmission and gear shifting operation from a high speed position to a next lower speed position;

expanding the high speed area in each selected speed change position corresponding to an increase in loaded weight;

inputting the output of said comparator circuit to a logic circuit; and

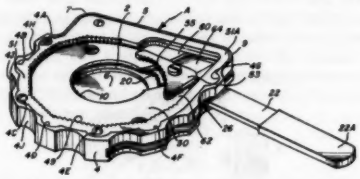
controlling the speed change position in response to an output signal from said logic circuit.

4,523,497

APPARATUS FOR REMOVING CONTAINER CAPS

Carl H. Rosberg, and Hazel N. Rosberg, both of 111 Airport Rd., Hyannis, Mass. 02601

Filed May 19, 1983, Ser. No. 496,231
Int. Cl.³ B67B *7/00*
U.S. Cl. 81—3.44 9 Claims



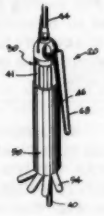
1. Apparatus for removing a container cap, said apparatus comprising a housing, inner and outer cap gripper jaw means fixed in the housing in spaced apart relationship, a handle element rotatably mounted in the housing and having separated gripper jaw portions movable with the handle toward and away from respective fixed jaw means said outer fixed jaw means being supported on spacer and divider plate means and the seperated jaws portion associated with said outer fixed jaw means being supported on a bolt fastened to the handle, the bolt being guided through slot means formed in the divider plate.

4,523,498

ERGONOMICAL IN-LINE TOOL

Ivan B. Chapman, Jr., Baltimore, Md., assignor to AT&T Technologies, Inc., Berkeley Heights, N.J.

Filed Feb. 2, 1983, Ser. No. 463,189
Int. Cl.³ B25B *13/00*
U.S. Cl. 81—177.1 6 Claims



1. An in-line tool which is adapted to be moved vertically between a rest position and a work position, said tool comprising:

a barrel;

a working portion which extends from said barrel and which is adapted to engage a workpiece; and

a jacket having at least a portion which covers and which is attached releasably to said barrel to allow said jacket to be in a predetermined position along said tool barrel with respect to said working portion, said jacket conforming to the contour of said barrel and including:

a length of relatively flexible substrate material; and

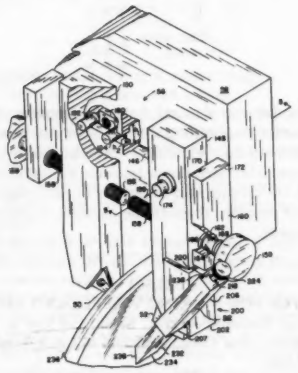
a plurality of ribs which are attached to an outer surface of said substrate material and which extend along said barrel parallel to a longitudinal axis thereof with an end of each of said ribs being adjacent to said working portion, each said rib including a laterally extending tab which is disposed in a predetermined position adjacent to said working portion and which is adapted to be engaged by the ulnar side of a user's hand to facilitate the application of forces to said tool to move said tool downwardly from the rest position to the work position, said jacket having a portion which extends beyond said barrel to position said tabs adjacent to said working portion.

4,523,499

DISC BRAKE LATHE

R. Warren Aldridge, Jr., Huntsville, Ala., assignor to Spencer Wright Industries, Inc., Chattanooga, Tenn.

Continuation-in-part of Ser. No. 474,531, Mar. 11, 1983,. This appl[2]cation Mar. 9, 1984, Ser. No. 588,010
Int. Cl.[3] B23B *5/02*
U.S. Cl. 82—4 A **17 Claims**



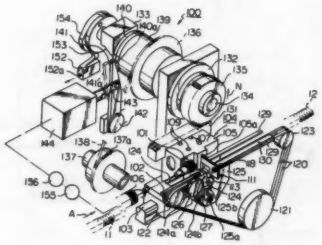
1. A disc brake lathe comprising: a machine base;
a support stand on said base
vertical guide means supported by said stand for providing a stationary planar way means;
a cross arm assembly having guide surfaces interfacing with said way means and configured to enable aligned and confined movement of said cross arm assembly along said way means;
at least one disc brake tool assembly secured to said cross arm assembly, and wherein said disc brake tool assembly comprises a pair of caliper arms, and a cutting tool being attached to each tool arm, and each said cutting tool being oriented to face an oppositely positioned cutting tool;
a shaft rotatably supported by said machine base having means to rotably support at least one disc brake rotor at a selected position;
drive means including an electrical motor rotating said shaft about its longitudinal axis; and
an antichatter assembly supported by said tool assembly and positioned to engage a single side of the disk brake rotor comprising:
a frame including a hollow tube-like housing mounted on said arm and extending toward a single side of the disc brake rotor when the rotor is supported on said shaft,
a block contoured to engage and move along within said tube-like housing and having an end surface contoured planarly to engage a generally flat side region of a disc rotor mounted on said shaft, said block being positioned to engage at least a radially outer region of the rotor, and
spring bias means on said tube-like housing for resiliently applying a bias force to said block and thereby applying a dampening force to said rotor; and
feed means moving said tool assembly and antichatter assembly into engagement with said rotor.

4,523,500

METHOD AND APPARATUS FOR CUTTING CONTINUOUS CORRUGATED MEMBER

Kimio Maruyama, Kariya, Japan, assignor to Nippondenso Co., Ltd., Kariya, Japan

Filed Apr. 14, 1983, Ser. No. 484,991
Claims priority, application Japan, Apr. 14, 1982, 57-60864
Int. Cl.[3] B26D *1/56*
U.S. Cl. 83—37 **20 Claims**



1. A method for cutting a continuous corrugated member into a predetermined length, said corrugated member having on each side face thereof a plurality of crest portions and trough portions extending in a direction perpendicular to a longitudinal direction thereof, comprising the steps of:
conveying said corrugated member in its longitudinal direction at a constant speed;
providing a movable cutter blade having thereon a sharpened edge which extends in a direction perpendicular to the longitudinal direction of said corrugated member and is located near one side face thereof;
moving said cutter blade forward from a predetermined rest position thereof in the conveying direction of said corrugated member at the same speed as the conveying speed thereof when a predeterminated length of said corrugated member passes in front of said sharpened edge of said cutter blade;
reciprocating said cutter blade in a direction perpendicular to the conveying direction of said corrugated member and perpendicular to the extending direction of said crest portions for cutting said corrugated member when said cutter blade is moved forward; and
returning said cutter blade to said rest position;
said method further comprising the steps of:
providing a movable cutter receiver having thereon a rounded edge which is located near the other side face of said corrugated member and extends in a direction perpendicular to the longitudinal direction of said corrugated member, said rounded edge being provided thereon with a slit for receiving said sharpened edge of said cutter blade;
moving said cutter receiver forward from a predetermined rest position thereof together with said cutter blade;
reciprocating said cutter receiver in a direction aligned with the reciprocating direction of said cutter blade for helping the cutting operation of said cutter blade when said cutter receiver is moved forward; and
returning said cutter receiver to said rest position thereof together with said cutter blade;
said reciprocating of said cutter blade comprises advancing it toward the crest portion located on the one side face of said corrugated member for cutting the crest portion thereof;

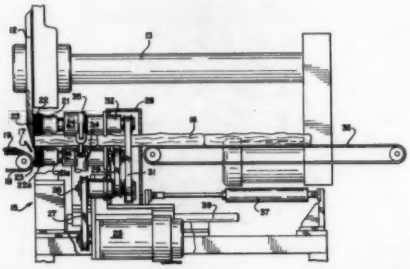
said reciprocating of said cutter receiver comprises advancing it toward the trough portion before said cutter blade is advanced toward the corresponding crest portion and maintaining it in a position in which said rounded edge of said cutter receiver stays in the trough portion when said cutter blade is advanced through said corrugated member.

4,523,501

SLICER FEED MECHANISM

Ronald E. Mengel, Madison, Wis., assignor to Oscar Mayer Foods Corporation, Madison, Wis.

Filed Sep. 19, 1983, Ser. No. 533,517
Int. Cl.³ B26D *1/15*
U.S. Cl. 83—42 **25 Claims**



1. An apparatus for feeding product to a slicer assembly having a blade for slicing an elongated product that is fed to the blade by a product supporting and conveying assembly, wherein the product supporting and conveying assembly includes a supplemental product supporting assembly and a controlled feed assembly downstream of and generally coextensive with the product supporting assembly, said controlled feed assembly comprising:

a plurality of augers, said augers being rotatably mounted along respective axes that are generally parallel to the feed path of said product supporting and conveying assembly;

a leading edge on each of said augers, said auger leading edges being closely spaced from the blade of the slicer;

said augers are sized and positioned for engaging the product along a leading length of longitudinal surface, said leading length of longitudinal surface of the product being along that portion of the product which is closest to the slicing blade, and said auger leading edges define a leading end of the product leading portion, whereby rotation of said augers in a respective feed direction of each auger pulls said product into slicing engagement with said blade; and

said controlled feed assembly includes means for controlling the rotational movement, rotational speed and direction of rotation of said augers to thereby control longitudinal movement of the leading length of the product and the speed and direction of product feed relative to said blade.

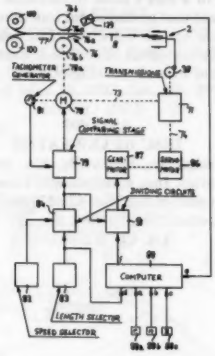
4,523,502

APPARATUS FOR ACCUMULATING STACKS OF PAPER SHEETS OR THE LIKE

Alfred Besemann, Hamburg, Fed. Rep. of Germany, assignor to E.C.H. Will (GmbH & Co.), Nedderfeld, Fed. Rep. of Germany

Filed Feb. 22, 1984, Ser. No. 582,333
Claims priority, application Fed. Rep. of Germany, Feb. 22, 1983, 3306066
Int. Cl.³ B65H *31/30, 35/08*
U.S. Cl. 83—71 **17 Claims**

1. Apparatus for forming stacks from sheets consisting of paper or a like flexible material, comprising a first station and a second station; mobile severing means for repatedly severing plural running webs of flexible material so as to form a series of groups of sheets; means for supplying successive groups of said series to said first station; means for gathering groups at said first station into a succession of layers; transfer means for transporting successive layers from said first station toward said second station at a variable frequency so that the number



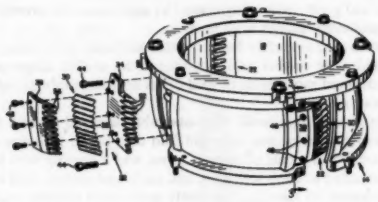
of groups per layer is a function of said frequency; a prime mover; means for transmitting motion from said prime mover to said transfer means, including a transmission arrangement with a whole-number step-down transmission ratio; and regulating means for varying said frequency in accordance with a predetermined program through the medium of said transmission arrangement.

4,523,503

APPARATUS FOR MAKING WAFFLE-CUT POTATO

John C. Julian, Tualatin; Jerry L. Sloan, and Lee A. Wheeler, both of Tigard, all of Oreg., assignors to Lamb-Weston, Inc., Portland, Oreg.

Filed Aug. 22, 1983, Ser. No. 525,115
Int. Cl.³ B26D *3/28*
U.S. Cl. 83—403 **5 Claims**



1. In a machine for slicing potatoes including a rotatable carriage having a plurality of radial guides, and stationary cutting assembly surrounding the carriage to slice potatoes fed outwardly by the guides, a knife assembly carried by the cutting assembly comprising:

an elongated knife including a corrugated cutting edge and opposed inner and outer sides, the sides each having a plurality of spaced longitudinal ridge portions extending perpendicularly to the cutting edge and longitudinal groove portions therebetween said grooves each defined by two sides and a bottom; and

knife holding means for rigidly mounting the knife to the cutting assembly;

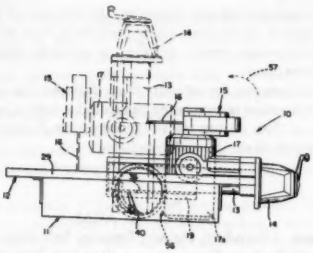
the knife holding means having a plurality of spaced fingers extending toward the cutting edge and contacting the bottoms of the groove portions to support the knife.

4,523,504

PORTABLE MACHINE TOOL HAVING AN OPERATING UNIT MOUNTED ON A COLUMN

Lorenzo E. Alessio, Lecco, Italy, assignor to Black & Decker Inc., Newark, Del.

Filed Nov. 22, 1983, Ser. No. 554,284
Claims priority, application Italy, Nov. 30, 1982, 23584/82[U]
Int. Cl.³ B27B 5/20
U.S. Cl. 83—471.3 **14 Claims**



1. A portable radial arm saw, comprising:
a base frame having a rear and a front;
a work surface supported by said base frame, said work surface comprising a front portion fixed to said base frame, and a rear portion removably held in place by releasable clamps;
a column having one end telescopically secured within a two part sleeve, the two parts of the sleeve being clamped together;
one of the parts of said sleeve having a first pivot plate rigidly secured thereto, said plate having therein a central bore and an arcuate slot concentric with said bore;
a second pivot plate mounted on the rear of said base frame and with which said first pivot plate cooperates;
a pivot engaged through said bore and pivotally connecting said first plate to said second plate, whereby said column is pivotally attached to said base frame said column being pivotal between an upright operative position in which the column extends upwardly above said work surface and a lateral inoperative position in which the column extends along and behind the rear of said base frame;
a bracket attached to said one of said sleeve parts for locating said column in a vertical upright position;
a rod engaged through said arcuate slot for releasably securing said column in any selected pivotal position;
an arm extending transversely from the other end of said column and having a circular saw unit slidably suspended therefrom, said unit including an electric motor; and
said base frame having a space therein below said removable rear portion, said motor entering and being at least partially housed in said space when said rear portion of said work surface is removed and said column pivoted to said lateral inoperative position.

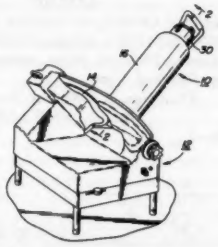
4,523,505

FOOD FEED CHUTE APPARATUS

Steven S. Polson, 1502 E. Lincoln Dr., Ambler, Pa. 19002

Filed Oct. 28, 1983, Ser. No. 546,753
Int. Cl.³ B26D 3/30
U.S. Cl. 83—713 **11 Claims**

1. A food feed chute apparatus adapted for mounting upon a rotary cutting machine comprising
a base adapted to be mounted to the cutting machine,
a tube having first and second ends and being attached to the base at a location proximate the first end of the tube,
a weighted pushing means disposable within the tube adapted for pushing food products to be fed through the tube toward the first end of the tube, and
attaching means for pivotably attaching the pushing means to the tube proximate the second end of the tube, the attaching means comprising a fixed member fixedly attached to the tube, a movable member, means for pivotably attaching the movable member to the fixed member, and a guide rod attached at its ends to the pushing means,



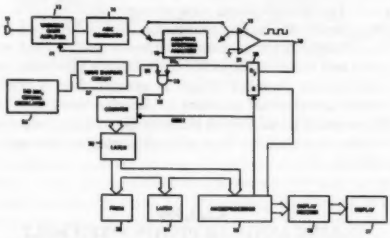
the guide rod having an elongated portion which is spaced from the pushing means and having an axis parallel to the axis of the pushing means, the elongated portion of the guide rod extending through an orifice in the movable member.

4,523,506

ELECTRONIC TUNING AID

Marshall H. Hollimon, 11155 La Paloma Dr., Cupertino, Calif. 95014

Filed Jan. 23, 1984, Ser. No. 572,883
Int. Cl.³ G10G 1/00; G09B 15/00; G01R 23/10
U.S. Cl. 84—454 **2 Claims**



1. An electronic, tempered scale tuning aid for identifying and displaying the pitch of an unknown sounded tone in terms of its absolute pitch and its departure from correct nominal intonation comprising:
an oscillator having an output signal;
detection means for determining the period of the sounded tone;
a gate having a first input which is responsive to the oscillator output signal and a second input which is responsive to the detection means and having an output which is enabled when the second input is enabled;
a digital counter responsive to the output of the gate, said counter having at least sufficient number of bits to provide for the desired resolution of the accumulated count;
first digital logic means for determining when a sufficient number of counts has been accumulated in the counter;
second digital logic means for determining the relative frequency, in octaves, represented by the accumulated count, and for producing a digital word which corresponds uniquely to each frequency increment within an octave which is it desired to display;
a digital decoder having inputs responsive to the output of

the second digital logic means and having outputs which uniquely correspond to the digital word inputs;

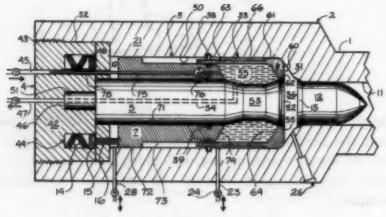
display means responsive to the outputs of the digital decoder said display having an indicator pattern which uniquely corresponds to the outputs of the digital decoder.

4,523,507

IN-LINE ANNULAR PISTON FIXED BOLT REGENERATIVE LIQUID PROPELLANT GUN

Inder K. Magoon, Pittsfield, Mass., assignor to General Electric Company, Fairfield, Conn.

Filed Nov. 2, 1983, Ser. No. 547,958
Int. Cl.³ F41F *1/04*
U.S. Cl. 89—7 **11 Claims**



7. In a regenerative injection liquid propellant gun structure in which injection of liquid propellant from a reservoir (35) to a combustion chamber (36) requires the movement of a differential area piston (6) relative to a fixed structural element (5) to permit the flow of such propellant through a valved orifice defined by said piston and said fixed element, and such movement and the opening of said orifice is initially precluded by resistance to pressure of such propellant contained in said reservoir, the improvement comprising:

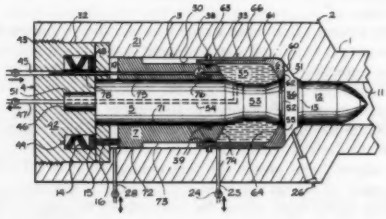
spring means (44) biasing said piston (6) fixed relative to said fixed element (5) to maintain closed said valved orifice until said piston is subjected to a pressure generated in said combustion chamber which is greater than a predetermined incremental pressure to thereby move said piston (6) relative to said fixed element (5) to open said valved orifice to permit the flow of such propellant through said valved orifice.

4,523,508

IN-LINE ANNULAR PISTON FIXED BOLT REGENERATIVE LIQUID PROPELLANT GUN

Robert E. Mayer, Williamstown; Inder K. Magoon, and Herbert J. West, both of Pittsfield, all of Mass., assignors to General Electric Company, Fairfield, Conn.

Filed Nov. 2, 1983, Ser. No. 547,959
Int. Cl.³ F41F *1/04*
U.S. Cl. 89—7 **35 Claims**



31. In a direct injection regenerative liquid propellant gun structure in which a differential area annular piston journaled in a breech bore in a casing is forced away from the barrel end of the breech bore by pressure in a combustion chamber during firing to exert pressure on a propellant reservoir also in said bore, the improvement comprising:

material holding and dispensing means interposed between said piston and said casing for injecting a material into the combustion chamber responsive to movement of the piston during firing; and

said material holding and dispensing means comprising:

a first mechanical means on the interior surface of said casing;

a second mechanical means on the exterior of said piston;

a space between said piston and said bore between said mechanical means defining a variable capacity container; and

conduit means for introducing a fluid to said container,

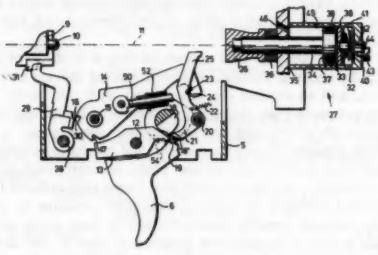
said mechanical means being separated longitudinally of said bore so that, during travel of said piston during firing, said container is substantially reduced.

4,523,509

SHOULDER ARM

Paul Thevis, Oberndorf; Helmut Danner, Sulz-Sigmarswangen, and Erich Weisser, Tennenbronn, all of Fed. Rep. of Germany, assignors to Heckler & Koch GmbH, Fed. Rep. of Germany

Filed Jul. 27, 1982, Ser. No. 402,268
Claims priority, application Fed. Rep. of Germany, Aug. 4, 1981, 3130761
Int. Cl.³ F41D *11/10*
U.S. Cl. 89—129.02 **11 Claims**



1. In an automatic shoulder arm having a hammer acting on a firing pin and provision for changing between semi-automatic fire, burst and automatic fire modes, the improvement comprising a mechanism for reducing the cyclic rate of fire in the automatic fire mode including a linearly movable fluid pressure restrained deceleration member retracted for cushioning the recoil and returned after each shot, a detent for said hammer, a deceleration lever having a projection engaging said hammer detent, said deceleration lever being movable upon return of said deceleration member to disengage said projection from said detent and release said hammer to release the next shot, and a safety pin for selecting the modes of fire and engageable in the burst mode to move said deceleration lever to a burst position in which said projection does not engage said hammer detent.

4,523,510

COMBINED SELECTOR, SAFETY AND TRIGGER ASSEMBLY FOR AUTOMATIC FIREARMS

Gary Wilhelm, Hamden, Conn., assignor to Demro Products, Inc., Manchester, Conn.

Filed Oct. 15, 1982, Ser. No. 434,580
Int. Cl.³ F41D *11/02*
U.S. Cl. 89—141 **19 Claims**

1. In a firearm, the combination comprising:

A. a receiver having an aperture in its bottom wall;

B. a bolt which reciprocates within said receiver,

C. a housing affixed at its upper end to the bottom of said receiver and having spaced sidewalls depending therefrom and defining a cavity therewithin, said receiver aperture communicating with the upper portion of said housing cavity;

D. an elongated trigger member;

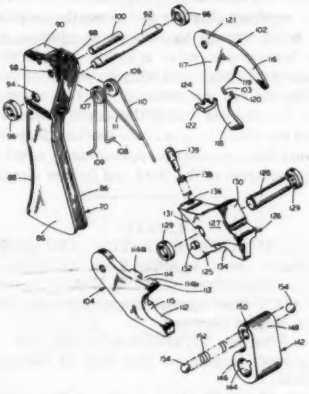
E. pivot means pivotally mounting said trigger member between said sidewalls of said housing for movement between a first and second position;

F. a sear member having a sear projection on its upper surface;

G. means pivotally mounting said sear member between said sidewalls of said housing for pivotal movement from a first position wherein said sear portion extends upwardly through said receiver aperture into said receiver for engagement with said bolt and to a second position wherein said sear portion is disposed below said receiver and not engageable with said bolt;

H. a semi-automatic bar in said cavity on one side of said sear member and having a cam surface on its upper edge portion;

I. means pivotally mounting said semi-automatic bar in said cavity for movement between a first position in which said semi-automatic bar extends through said aperture to locate said cam surface in said receiver for engagement by



said bolt and a second position in which said bar is disposed below said receiver and is not engageable with said bolt;

J. an automatic bar in said cavity on the other side of said sear member;

K. means pivotally mounting said automatic bar in said cavity for movement between a first position and a second position;

L. cooperating engagement means on said sear member and on said automatic bar, said engagement means engaging said sear member in the second position of said automatic bar;

M. cooperating means on said sear member and on said semi-automatic bar for effecting engagement therebetween and concurrent movement of said sear member with said semi-automatic bar during initial movement of said semi-automatic bar from said one position thereof to said second position thereof, said cooperating means disengaging during said movement to release said sear member for return to its first position;

N. means engaging said bars with said trigger member for movement of said bars from said first and second positions thereof by pulling of said trigger;

O. a selector member in said cavity having a body and a cam portion;

P. means pivotally mounting said body of said selector member in said housing cavity for rotation about an axis among three positions, one of said positions being a safe position wherein said cam portion is disposed in close proximity to said sear member to prevent its pivoting from said first position to said second position thereof; a second pivoted position being one in which said cam portion is pivoted into a position free from operative engagement with said sear member, said semi-automatic bar and said automatic bar thereby permitting said sear member to pivot into said second position thereof in response to movement of said trigger to said second position thereof and thereby allowing said firearm to fire semi-automatically with said semi-automatic bar being cammed downwardly by forward movement of said bolt and releasing said sear member to pivot to its said first position to engage said bolt upon its recoil; and a third position in which said cam portion engages said semi-automatic bar and said automatic bar to pivot them into their respective second positions in which position thereof pivoting of said trigger to its said second position pivots said sear member into the second position by its engagement with said automatic bar to permit continuous reciprocation of said bolt so long as said trigger is retained in said second position thereof.

4,523,511

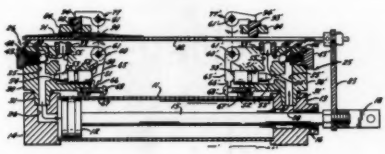
RECIPROCATING FLUID-OPERATED ACTUATOR WITH DECELERATION CONTROL

Paul H. Dixon, Belvidere, Ill., assignor to Dixon Automatic Tool, Inc., Rockford, Ill.

Filed Feb. 17, 1984, Ser. No. 581,241

Int. Cl.³ F15B *15/22*

U.S. Cl. 91—24 **7 Claims**



1. An actuator comprising an elongated cylinder member, a piston member telescoped into said cylinder member, one of said members moving in one direction relative to the other member when pressure fluid is exhausted out of one end of said cylinder member, a valve for controlling the flow of pressure fluid out of said one end of said cylinder member, said valve comprising a valve housing having a first port communicating with said one end of said cylinder member, said valve housing having a second port adapted to be alternately pressurized and de-pressurized to admit pressure fluid into and to exhaust pressure fluid from said housing, a primary flow passage in said valve housing and extending between said ports, means in said primary passage for permitting pressure fluid to flow from said second port into said one end of said cylinder through said primary passage while preventing pressure fluid from flowing reversely out of said one end of said cylinder to said second port through said primary passage, a secondary passage in said housing and extending between said ports, a valve member mounted in said housing, said valve member being movable toward a closed position to restrict the flow of pressure fluid through said secondary passage from said first port to said second port and being movable toward an open position to enable an increase in such flow, said valve member being exposed to the pressure fluid in said primary passage and being biased toward said open position by such pressure fluid, and means for moving said valve member toward said closed position at a controlled rate as an incident to said one member moving through a predetermined distance in said one direction whereby said valve member restricts the flow of pressure fluid out of said one end of said cylinder member and thereby re-

stricts the rate of travel of said one member in said one direction, said moving means comprising a cam movable with said one member, a cam follower operably connected to said valve member and engageable with said cam when said one member moves through said predetermined distance in said one direction, a first lever pivotally mounted on said housing and having a pair of arms, said cam follower being operably associated with one of said arms, means on the other of said arms for moving said valve member toward said closed position in response to pivoting of said lever in one direction, a second lever pivotally mounted on said housing and free to turn in at least one direction independently of said first lever, said second lever being interposed between said valve member and said second arm of said first lever.

4,523,512
TELESCOPIC SUPPORT PROPS FOR MINERAL MINING

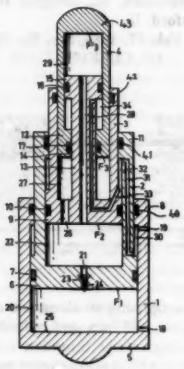
Heinz Hessel, Flaesheim, and Karl Heinz Plester, Lunen, both of Fed. Rep. of Germany, assignors to Gewerkschaft Eisenhutte Westfalia, Lunen, Fed. Rep. of Germany

Filed Dec. 17, 1982, Ser. No. 450,611

Claims priority, application Fed. Rep. of Germany, Dec. 21, 1981, 3150643

Int. Cl.³ F15B *11/18*

U.S. Cl. 91—168 **6 Claims**



1. In or for a mine roof support, a telescopic prop comprising an outer member (1), a first inner member (2) disposed within said outer member and mounted for longitudinal displacement relative thereto, a second inner member (3) disposed within the first inner member and mounted for longitudinal displacement relative thereto, a third inner member (4) disposed within the second inner member and mounted for longitudinal displacement relative thereto, a first working chamber (20) formed within the outer member and connectible to a source of hydraulic pressure fluid to effect prop extension, a piston (6) of the first inner member with a first working face (F1) which is acted on by hydraulic pressure fluid in the first working chamber to effect initial extension of the first inner member and of the second and third inner members therewith, a second working chamber (22) formed within the first inner member, a piston (9) of the second inner member with a second working face (F2) which is acted on by pressure fluid admitted into the second working chamber after extension of the first inner member to effect secondary extension of the second inner member and of the third inner member therewith, a third working chamber (27) formed within said second member, a piston (12) of the third inner member with a third working face (F3) which is acted on by pressure fluid in the third working chamber, a further working chamber (29) formed within the third inner member which has a further working face (F'3) which can be acted upon by pressure fluid in said further chamber, a further auxiliary piston (15) confronting the working face in the third inner member and connected via a rod (13) with said second member piston to move therewith, the rod passing through the third member piston and being sealed with respect thereto, stop means (8, 11, 15) for limiting the extension of each of the inner members, means (26, 28) establishing hydraulic communication between the second, third and further working chambers to permit pressure fluid to enter the third and further working chambers from the second working chamber after extension of the second inner member to act on the third and further working faces to effect tertiary extension of the third inner member; a first annular chamber (30) between the outer member and the first inner member, a second annular chamber (32) between the first inner member and the second inner member and a third annular chamber (34) within the third inner member between the third and the further auxiliary pistons, and means (31, 33) establishing hydraulic communication between said annular chambers at least one of which is connectible to a source of hydraulic pressure fluid in order to effect forceable retraction of the first, second and third inner members, wherein the first piston is provided with a non-return valve (23) which operates to block connection between the first and second working chambers, said valve being opened by pressure in the first working chamber when the first inner member has been initially extended to allow fluid to enter the second working chamber and cause the secondary extension, and being opened by associated actuating means (24) when the first inner member is almost completely retracted within the outer member, and wherein the effective area of the first working face of the piston of the first inner member is larger than the effective area of the working faces of the other pistons, and the effective area of the working face of the piston of the second inner member is approximately equal to the sum of the effective areas of the third and further working faces.

4,523,513
PNEUMATIC DOOR-OPERATING ARRANGEMENT

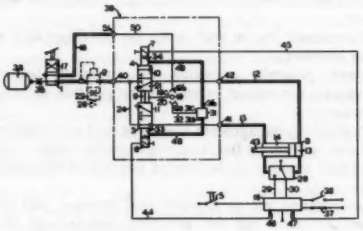
Wolfgang Gudat, Hanover; Alfred Klatt, Wathlingen, and Gunter Sebesta, Hemmingen, all of Fed. Rep. of Germany, assignors to WABCO Westinghouse Fahrzeugbremsen GmbH, Hanover, Fed. Rep. of Germany

Filed Jun. 27, 1983, Ser. No. 507,820

Claims priority, application Fed. Rep. of Germany, Jul. 8, 1982, 3225536

Int. Cl.³ F15B *11/10, 13/043;* **E05F** *15/02*

U.S. Cl. 91—427 **18 Claims**



1. In combination a pneumatic door control arrangement and a door drive with a control chambers which move a door between an open and a closed position, comprising:

(a) a control valve having an opening solenoid-operated pilot valve and a closing solenoid-operated pilot valve selectively actuating respective opening and closing spool members to venting and operating positions such that fluid pressure can flow to said door drive to open and close a door, said spool members each having a pressure responsive surface associated therewith;

(b) safety switch means for sensing the occurrence of a differential operating pressure in said door drive;

(c) switching means for selectively energizing one of said solenoid-operated pilot valves in response to an operator-initiated control, and, for deenergizing said one solenoid-operated pilot valve and energizing the other of said solenoid-operated pilot valve in response to an output from said safety switching means while said door drive is closing a door, and for simultaneously energizing both of said solenoid-operated pilot valves in response to an output from said safety switching means while said door drive is opening a door; and

(d) said control valve having a non-return valve means in communication with said opening and closing solenoid-operated pilot valves and operable to a center, open position upon simultaneous energization of said opening and closing solenoid-operated pilot valves for passing fluid pressure to said pressure responsive surfaces of said opening and closing spool members and actuating the one of said end opening and closing spool members in its operating position to its venting position to effect simultaneous venting by the spool members.

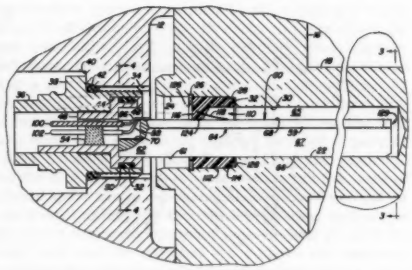
4,523,514
POSITION SENSING CYLINDER

Ronnie F. Burk, Waterloo, Iowa, assignor to Deere & Company, Moline, Ill.

Continuation of Ser. No. 300,331, Sep. 8, 1981, abandoned. This application Mar. 29, 1984, Ser. No. 594,425

Int. Cl.³ F01B *25/26*

U.S. Cl. 92—5 R **6 Claims**



1. A position-sensing hydraulic cylinder comprising:

a hollow cylindrical housing;

a piston and rod assembly reciprocal in the housing;

a walled bore extending longitudinally into the piston and rod assembly;

a support fixed with respect to the housing and reciprocally received by the bore, the support including a planar support surface on one side thereof;

a potentiometer assembly including a potentiometer element disposed on the planar support surface, and an electrically conductive wiper means slidably and resiliently engaging the potentiometer element for maintaining electrical continuity therewith; and

a wiper carrier coupled for movement with the piston and rod assembly for moving the wiper means relative to the potentiometer assembly, the wiper carrier having means cooperating with the support and the wall of the rod bore for permitting fluid flow past the wiper carrier and for substantially preventing fluid flow past the wiper carrier in the vicinity of the wiper means, the potentiometer assembly generating signals representing relative positions of the wiper means and the potentiometer element.

4,523,515
VALVE OPERATING CYLINDER UNIT

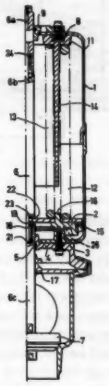
David A. Smith, Horsham, England, assignor to APV Company Limited, England

Filed Dec. 14, 1982, Ser. No. 449,587

Claims priority, application United Kingdom, Dec. 31, 1981, 8139164

Int. Cl.³ F01B *29/04*

U.S. Cl. 92—59 **7 Claims**



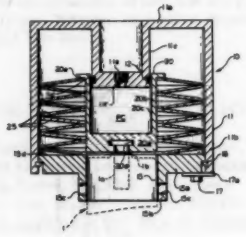
1. In a single-acting piston/cylinder unit comprising a cylinder having first and second end walls, a piston within the cylinder for reciprocating between the first and second end walls and an operating shaft which has a hollow portion and an operating fluid connection in communication with the hollow portion and with a chamber in the interior of the cylinder defined between one side of the piston and the first end wall to supply operating fluid which drives the piston; the improvement being in that said operating shaft is made up of three portions, namely a fluid inlet end portion having a fluid inlet therethrough for supplying the operating fluid, an intermediate portion anchored to the piston, said intermediate portion including the hollow portion in communication with said fluid inlet and the operating fluid connection in communication with the interior of the cylinder to said one side of said piston, and an operating end portion to be connected to a valve member or other element to be actuated by the operating shaft, said three portions being threadedly connected together end to end and each end of the intermediate portion being attached sealingly to either the fluid inlet end portion or the operating end portion such that the orientation of the intermediate portion relative to the fluid inlet end portion and the operating end portion can be reversed while maintaining communication between said fluid inlet and said hollow portion to reverse orientation of the operating fluid connection relative to said piston, the fluid connection then being in communication with a second chamber in the interior of the cylinder defined between said one side of the piston and the second end wall such that the direction in which said piston is driven by the operating fluid introduced to the chamber through said operating fluid connection is reversed.

4,523,516

ACTUATOR HAVING BELLEVILLE WASHER CONFIGURATION OPERATING IN CONCERT WITH A PISTON CYLINDER MEMBER

Stephen R. Foster, Gretna, and Peter W. Austin, New Orleans, both of La., assignors to Baker CAC, Inc., Belle Chasse, La.

Division of Ser. No. 307,713, Oct. 2, 1981, Pat. No. 4,445,424.
This application Feb. 27, 1984, Ser. No. 583,689
Int. Cl.³ F16J *10/02*; F01B *31/00*
U.S. Cl. 92—130 B **1 Claim**



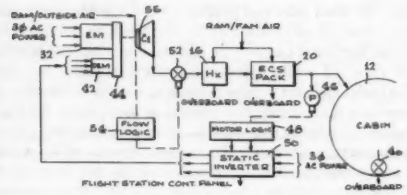
1. A fluid pressure actuator for a valve having a housing and an actuating stem, comprising: an annular housing having a closed end and an opposed open end; an annular connecting member secured to said open end of said annular housing, said annular connecting member having a radial flange portion connectable to said open end of said annular housing and an axially extending portion connectable to the valve housing; means for securing said radial flange portion to said open end of said annular housing comprising an annular groove in the bore of said annular housing, and a C-ring engaged in said groove; a cylindrical piston element concentrically formed on said closed end and extending into the interior of said annular housing toward said open end; a cup-shaped cylinder slidably and sealably mounted on the exterior of said cylindrical piston element and defining an annular space between its exterior surface and the interior bore of said annular housing; a radially outwardly projecting shoulder on the open end of said cup-shaped cylinder; conduit means in said cylindrical piston element for supplying pressured fluid to the interior of said cylinder to urge same toward the valve; resilient means mounted in said annular space between said radial flange portion and said shoulder to oppose the fluid pressure produced movement of said cylinder; and means on said cylinder for connection to the actuating stem of the valve.

4,523,517

ALL ELECTRIC ENVIRONMENTAL CONTROL SYSTEM FOR ADVANCED TRANSPORT AIRCRAFT

Michael J. Cronin, Sherman Oaks, Calif., assignor to Lockhead Corporation, Burbank, Calif.

Continuation of Ser. No. 183,609, Sep. 2, 1980, abandoned. This application May 13, 1983, Ser. No. 494,229
Int. Cl.³ B64D *13/00*
U.S. Cl. 98—1.5 **3 Claims**



1. In an aircraft environmental control system for providing a desired amount of conditioned air to the aircraft cabin, said system including at least one compressor for producing a primary supply of high pressure air within said system, the improvement comprising:

an electric motor;

a planetary gearbox;

a "makeup"/"subtract" differential electric motor, said electric motor being arranged to drive said compressor through said planetary gearbox and said differential electric motor being mounted to said planetary gearbox and being adapted to speed up or slow down said compressor in a continuous manner during different segments of the flight of said aircraft, when the pressure of said conditioned air varies from certain preselected desired values; and

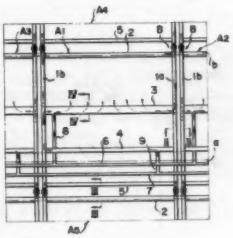
means for monitoring the pressure of said conditioned air entering said cabin and for sending a signal representative of the monitored value thereof, and further including means for comparing said monitoring pressure value with said preselected desired values and for activating said differential electric motor to speed up or slow down said compressor when said monitored pressure value fails below or exceeds said desired value.

4,523,518

APPARATUS FOR CONTROLLING TEMPERATURE IN A UNIT TYPE CURTAIN WALL

Karl Gartner, Gundelfingen, Fed. Rep. of Germany, assignor to Yoshida Kogyo K.K., Tokyo, Japan

Filed Aug. 1, 1983, Ser. No. 519,200
Claims priority, application Japan, Aug. 2, 1982, 57-133764
Int. Cl.³ F24F *7/10*
U.S. Cl. 98—31 **8 Claims**



1. An apparatus for controlling temperature in a unit type curtain wall, the said curtain wall being formed with a plurality of curtain wall units each having a substantially square skeleton in which a plurality of horizontal frame members are horizontally connected between left and right vertical frame members, and the said curtain wall units being arranged at top and bottom and to left and right, characterized in that the said vertical frame members and the said horizontal frame members have hollow portions, respectively, which are air flowing passages through which conditioned air is made to flow so as to blow said conditioned air into a room through air blow-off openings formed in said horizontal frame members, and that respective hollow portions of the vertical frame members adjacent to left and right and opposite to top and bottom at their respective one ends are respectively arranged at opposed top and bottom ends in such a manner of allowing them to communicate with each other only in relation to top and bottom by the interposition of flexible cylindrical connecting members thereby forming vertically communicating air flowing ducts, respectively, which are independent of each other to left and right, said pair of vertical frame members adjacent to left and right are connected with each other through packing band means fitted between and into recesses respectively formed in the said pair of vertical frame members in such a

manner of opposing to each other, thereby enabling to absorb a relative displacement caused between curtain wall units adjacent to left and right.

4,523,519

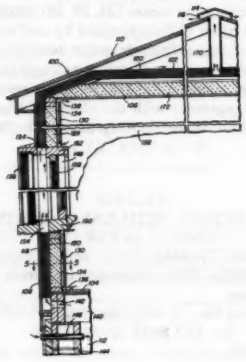
HEATING AND COOLING SYSTEM USING GROUND AIR

Wilfred B. Johnson, 3289 Star Rte., Manistique, Mich. 49854

Filed Sep. 2, 1983, Ser. No. 528,853

Int. Cl.³ F24H *7/00*

U.S. Cl. 98—31 **7 Claims**



1. A heating and cooling system for buildings comprising a building structure having a peripheral wall, a roof and below ground enclosed basement space, an enclosed space above the basement space, a floor separating the basement space from the enclosed space above the basement space, said peripheral wall including a plurality of vertical air ducts in communication with the basement space, said air ducts in the peripheral wall terminating in inwardly extending air ducts below the roof communicating with a discharge adjacent the roof to provide flow of air between the basement space and the discharge adjacent the roof for vertical flow of air through the walls of the enclosed space above the basement space, said vertical air ducts covering substantially the entire peripheral wall of the enclosed space above the basement space to heat or cool the peripheral wall and the enclosed space above the basement space and prevent migration of ambient air between the outer and inner surfaces of the wall, the inner surface of said wall including means providing a vertical air passage between a point adjacent the floor and a point spaced substantially above the floor, said air ducts in the peripheral wall each including a plurality of spaced sheets defining a plurality of thin vertical air passages extending throughout the peripheral wall and inwardly to the air discharge adjacent the roof.

4,523,520

MEAT PROCESSING EQUIPMENT

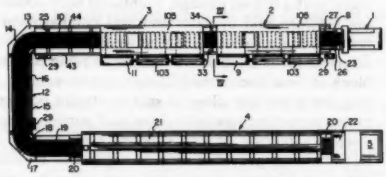
Richard E. Hofmann, Pittsburgh, and Robert G. Hofmann, Jr., Allison Park, both of Pa., assignors to North Side Packing Company, Pittsburgh, Pa.

Filed Jan. 17, 1984, Ser. No. 571,563

Int. Cl.³ A47J *37/06*

U.S. Cl. 99—352 **30 Claims**

1. In a continuous meat processing line having inlet and outlet ends, a patty-forming machine at the inlet end, a cooking portion, a transfer section having at least one conveyor belt, a freeze section and a packing section at the outlet end, the improvement comprising said cooking portion having a first cooking section aligned with said patty-forming machine and a second cooking section aligned with said first cooking section, said first cooking section having a conveyor belt with a discharge end and a receiving end for receiving patties from said patty-forming machine, means supporting said conveyor belt for movement in said first cooking section, means for driving said conveyor belt, at least one heating unit in said first cooking section located above said conveyor belt, said heating unit having a plurality of individual radiant heaters, a water tray located below said conveyor belt and said heating unit, said second cooking section having a conveyor belt with a discharge end and a receiving end for receiving patties from said discharge end of said conveyor belt in said first cooking section, means supporting said conveyor belt for movement in said second cooking section, means for driving said conveyor belt, at least one heating unit in said second cooking section located above said conveyor belt, said heating unit having a plurality of individual radiant heaters, a water tray located below said conveyor belt in said second heating section and said heating unit, said discharge end of said conveyor belt in said second cooking section discharging patties onto said conveyor belt in said transfer section for transfer to said freezer section, and means to drain said water trays.



4,523,521

SPINDLE PRESS

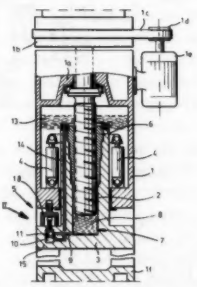
Eduard J. C. Huydts, Düsseldorf, Fed. Rep. of Germany, assignor to G. Siempelkamp GmbH & Co., Krefeld, Fed. Rep. of Germany

Filed Sep. 16, 1983, Ser. No. 533,198

Claims priority, application Fed. Rep. of Germany, Sep. 17, 1982, 3234520

Int. Cl.³ B30B *1/18*

U.S. Cl. 100—259 **4 Claims**



1. A spindle press comprising:

an upright press support;

a ram mounted on said support for vertical movement thereon;

a spindle threadedly engaging said ram for displacing same on said support in one direction upon driven rotation of said spindle, said support being hollow and formed with a lubricant-containing internal compartment, said spindle extending into said compartment; and

at least one return jack connecting said ram with said support for displacing said ram in the opposite direction in a

return stroke, said ram having a lubricant passage through which lubricant is displaced into and out of said compartment by relative movement of said spindle and said ram, a throttle being connected with said passage for restricting flow therealong, said throttle being disposed on a lower portion of said ram and including a piston for blocking said passage upon said ram approaching a deadpoint position in a return stroke, whereby lubricant trapped between said spindle and said ram damps the termination of said return stroke, said passage being formed with a throttle cylinder receiving said piston and said piston being provided with a bypass passage, a lubricant bore communicating between said cylinder and said compartment and a further bore communicating between said cylinder and a reservoir for said lubricant, said piston being positioned to block at least one of said bores upon movement of said ram into a position close to said deadpoint position, said pistpn projecting upwardly from said portion of said ram toward a portion of said support, said portion of said support being provided with an adjustable abutment engaging said piston as said ram spproaches its deadpoint position.

4,523,522

ROTARY PRINTING MACHINE WITH WEB TEAR CLEARING SYSTEM

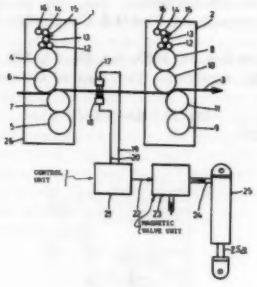
Hermann Fischer, Augsburg, Fed. Rep. of Germany, assignor to M.A.N.-Roland Druckmaschinen Aktiengesellschaft, Offenbach am Main, Fed. Rep. of Germany

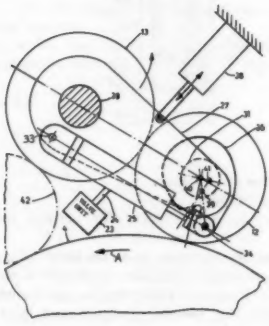
Filed Nov. 17, 1983, Ser. No. 552,730

Claims priority, application Fed. Rep. of Germany, Nov. 27, 1982, 3244045

Int. Cl.³ B41F *5/04, 13/28, 13/32, 13/34*

U.S. Cl. 101—219 **13 Claims**





1. Rotary printing machine having a plate cylinder (4);

an inker (12–16) applying ink to the plate cylinder including an ink roller train (14–16);

an ink supply roller (13), and

an ink application roller (12) in surface contact with the plate cylinder (4) and the ink supply roller (13);

and means (17–24) sensing tearing of paper being supplied to the printing machine and, upon detecting torn paper, providing a "torn paper" signal,

comprising, in accordance with the invention,

means for preventing damage to the printing machine and transport of torn paper into the ink roller train in case of tearing of paper being supplied to the printing machine, including separating means (25, 30, 35) coupled to the ink application roller (12), controlled by and responsive to a "torn paper" signal from the paper tearing sensing means for removing the ink application roller (12) from contact with the ink supply roller (13) while maintaining resilient yielding engagement with the plate cylinder (4) so as to permit the broken web to wrap around the ink application roller.

4,523,523

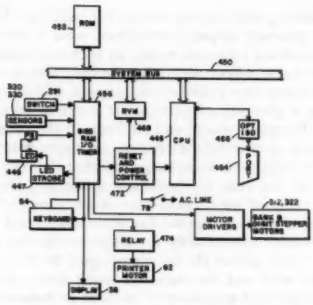
MAILING MACHINE WITH ENVELOPE INSERTION SENSING APPARATUS

Jovito N. Abellana, Trumbull, Conn., and Easwaran C. N. Nambudiri, Hicksville, N.Y., assignors to Pitney Bowes Inc., Stamford, Conn.

Filed Dec. 8, 1982, Ser. No. 447,917

Int. Cl.³ B41F *13/24, 33/08*

U.S. Cl. 101—235 **6 Claims**



1. An electronically controlled mailing machine comprising: a housing having a slot into which an envelope may be inserted, a platen movably mounted within the housing, a print head movably mounted within the housing and overhanging said platen, a single revolution clutch coupled to said platen and to said print head for movement of said platen and said print head toward each other for urging an envelope inserted into the slot into imprinting engagement with said print head, a motor coupled to said clutch for actuation thereof, computer means for controlling said motor to actuate said clutch, said computer means including a microprocessor and a system bus, said computer means including a ROM connected to said microprocessor through said system bus, said ROM including a program stored therein for controlling said microprocessor, switch means including a member movably mounted within said housing and extending into said slot for movement by an envelope inserted thereinto, said switch means including optical sensing means mounted within the housing, said optical sensing means including an LED and a photosensor spaced apart from each other to permit movement of said member therebetween, said optical sensing means electrically connected to said computer means, said computer means including strobe means electrically connected to said microprocessor

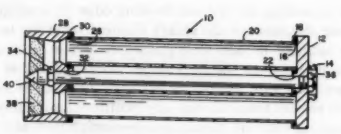
and to said optical sensing means, said microprocessor causing said strobe means under the control of said program to intermittently energize said LED whereby said photosensor is normally caused to intermittently signal said microprocessor said photosensor responsive to movement of said member between said LED and said photosensor for interrupting said intermittent signal, and said microprocessor operating under the control of said program for responding to the interruption of said signal for causing said motor to actuate said clutch, whereby when an envelope is inserted into said slot said print head and said platen move toward each other for urging an inserted envelope into printing engagement with said print head.

4,523,524

LOW COST ANTITANK ROCKET MOTOR STRUCTURE

Bernie J. Cobb, Huntsville, Ala., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jan. 31, 1983, Ser. No. 462,509
Int. Cl.³ F42B *13/28*
U.S. Cl. 102—374 **4 Claims**



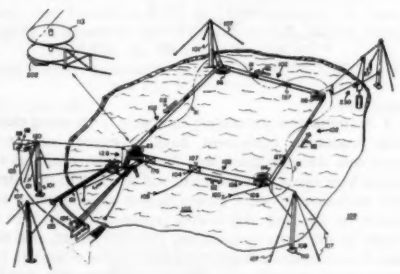
1. A rocket motor structure comprising a forward head closure having means on one side for attaching a warhead and openings on the opposite side for receiving a multiplicity of rocket tubes, an aft nozzle structure having a multiplicity of openings at one end, and a multiplicity of rocket tubes mounted at their opposite ends in said openings of said aft nozzle structure and said forward head closure, and a bolt securing means extending between said aft nozzle structure and said head closure and clamping said tubes between said forward head closure and said aft nozzle structure, and said multiplicity of tubes each having a solid propellant mounted therein.

4,523,525

WATER SKIING TOW SYSTEM

Richard L. Foster, Albuquerque, N. Mex., assignor to C & I Joint Venture, Albuquerque, N. Mex.

Filed Nov. 30, 1981, Ser. No. 325,858
Int. Cl.³ B61B *7/04, 11/00;* E01B *25/14*
U.S. Cl. 104—173 ST **9 Claims**



1. Traction apparatus useful in a system for towing water skiers which comprises:

(a) a plurality of cables, each of which is formed into a single, open-ended loop, and

(b) a plurality of means for connecting the cable loops end to end to produce an endless, closed sequence of said loops, said means for connecting said cable loops end to end comprising means for holding the open end of a first cable loop in fixed spaced relationship to the base of the next adjoining loop and including means for holding the ends of said first cable loop in fixed parallel relationship and sheave means permitting the base of said adjoining loop to move therethrough to equalize the length of cable in the arms of this loop, said sheave means being adapted to ensure that the arms of said loop engaged therewith are in the same spaced relationship as the ends of said first cable loop, said means for holding the ends of said first cable loop in fixed parallel relationship including first and second spacer means extending between the arms of said first cable loop and cable clamping means on each end of said spacer means secured to a corresponding arm of said first cable loop, said first and second spacer means having a pair of crossed compensating cables connected between them with the means for connecting said crossed compensating cables to said first spacer means being rotatable about the axis of said first spacer means and maintained under sufficient tension to ensure that said compensating cable remain taut regardless of the spacing between said first and second spacing means.

6. A system for towing water skiers which comprises:

(a) sets of drive and idler pulley pairs,

(b) means for supporting said sets of drive and idler pulley pairs at a desired elevation and in a desired spaced relationship corresponding generally to an intended towing path,

(c) traction apparatus comprising a plurality of openended cable loops and a plurality of means for connecting said cable loops end to end to produce an endless, closed sequence in which the arms of each loop are substantially parallel and trained over the pulleys of each pulley pair, said means for connecting said cable loops end to end comprising means for holding the open end of a first cable loop in fixed spaced relationship to the base of the next adjoining loop including means for holding the ends of said first cable loop in fixed parallel relationship and sheave means permitting the base of said adjoining loop to move therethrough to equalize the length of cable in the arms of this loop, said sheave means being adapted to ensure that the arms of said loop engaged therewith are in the same spaced relationship as the ends of the said first cable loop, said means for holding the ends of said first cable loop in fixed parallel relationship including first and second spacer means extending between the arms of said first cable loop and cable clamping means on each end of said first spacer means secured to a corresponding arm of said first cable loop, said first and second spacer means having a pair of crossed compensating cables connected between them with the means for connecting said crossed compensating cables to said first spacer means being rotatable about the axis of said first spacer means and maintained under sufficient tension to ensure that said compensating cables remain taut regardless of the distance between said first and second spacing means,

(d) means for driving said traction apparatus at a desired speed,

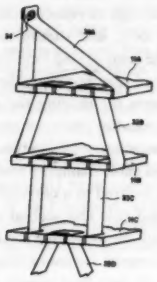
(e) a plurality of tow lines, and

(f) means for coupling and releasing said tow lines to and from said traction apparatus.

4,523,526
HANGING STRAPPED SHELVES

Hugh O'Neill, Mississauga, Canada, assignor to Sling-All Ltd., Mississauga, Canada

Filed Mar. 14, 1983, Ser. No. 475,087
Int. Cl.³ A47B 5/02
U.S. Cl. 108—149 6 Claims



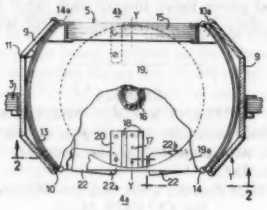
1. Shelf assembly, comprising:
an upper shelf and a lower shelf, both of rectangular shape;
a left shelf-strap and a right shelf-strap;
where each shelf has respective left and right strap attachment locations;
where the two shelf-straps are formed as substantially identical endless loops of webbing;
where, at each strap attachment location, the shelf is provided with slots which pass right through the shelf from its top surface to its bottom surface;
where the material of the shelf is divided by the slots into separate tongues;
where each shelf-strap is attached to both shelves at respective strap attachment locations;
where, at each strap attachment location, the webbing passes through the slots and passes alternately over and under the tongues at that location, in such a manner that a portion of the length of the webbing lies tightly flat against the top surface of one tongue, and another portion of the length lies tightly flat against the bottom surface of another tongue at that location;
and where each slot is open to an edge of the shelf in such a manner that webbing is insertable into and removable from the slot in a direction in the plane of the shelf.

4,523,527
SECURITY APPARATUS FOR THE PASSAGE OF OBJECTS

Claude P. Bourlier, 3 rue J.F. Belbeoch, 94410 Saint Maurice, and Louis E. Sallot, 9 rue du Général Leclerc, 92270 Bois Colombes, both of France

Filed Jan. 28, 1981, Ser. No. 229,230
Claims priority, application France, Feb. 15, 1980, 80 03400
The portion of the term of this patent subsequent to Nov. 10, 1998, has been disclaimed.
Int. Cl.³ E06B 7/32
U.S. Cl. 109—19 15 Claims

1. Apparatus for rotary transfer of objects, of the kind comprising a fixed frame and a rotary element mounted for rotation relative to said frame about a vertical axis, said rotary element comprising a cavity for receiving the objects to be transferred, means for stopping and locking the rotary element relative to the frame in two diametrically opposite stop positions, said rotary element defining an opening for access to said cavity, and said frame defining corresponding diametrically opposite openings which are respectively juxtaposed with said opening of the rotary element in said two stop positions, whereby said cavity is accessible for the transfer of an object alternatively from opposite sides of said frame, said stop and locking means comprising at least one abutment on the end of the rotary element and, projecting into the circular path of this abutment, at least one abutment on the corresponding end of the frame, characterised in that the means for stopping and locking **20**, **20***a*, **17**, **23**, **22** the rotary element **5** relative to the frame (**1**) comprise leaf spring means **22**, also projecting into the circular path of said at least one abutment **20**, **20***a* of the rotary element (**5**) and mounted on the end **8** of the frame (**1**), said leaf spring

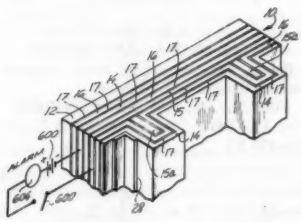


means presenting at least one locking edge for engaging said at least one abutment of the rotary element whereby to lock said rotary element in said stop positions, and at least one ramp surface inclined to the horizontal whereby said at least one abutment can ride over said leaf spring means as said rotary element rotates towards said stop positions, and damper means for damping rotation of said rotary element towards said stop positions.

4,523,528
INSULATING APPARATUS AND COMPOSITE LAMINATES EMPLOYED THEREIN

Otis H. Hastings, and Otis M. Hastings, both of Mahwah, N.J., assignors to Transaction Security, Inc., Montvale, N.J.

Continuation-in-part of Ser. No. 102,552, Dec. 11, 1979, Pat. No. 4,381,716, which is a continuation-in-part of Ser. No. 912,974, Jun. 5, 1978,. This application Jul. 13, 1981, Ser. No. 282,709
Int. Cl.³ E04B 2/02; E05G 1/024
U.S. Cl. 109—42 18 Claims



1. A transaction processing enclosure for housing electronic data processing equipment, banking payout and receiving apparatus, documentation and the like, that comprises a housing; at least one access means in said housing to the interior of said enclosure; closure means having outer surface conformance in size and shape, and registrable, with said access means to effect the opening and closing thereof, said housing and closure means comprising a laminate of integrally bonded components including at least two electrically conductive plies; at least one structural element and at least one radiant heat reflective ply; said at least one structural element and said at least one radiant reflective ply being incorporated in or separated from said electrically conductive plies; each of said electrically conductive plies and said radiant heat-reflective ply where present independently and said structural element being isolated from each other by an electrically insulating,

fibrous, refractory, ceramic ply attached thereto by means of an adhesive ply.

4,523,529

PROCESS AND BURNER FOR THE PARTIAL COMBUSTION OF SOLID FUEL

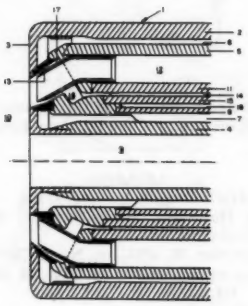
Ian Poll, Amsterdam, Netherlands, assignor to Shell Oil Company, Houston, Tex.

Filed Oct. 6, 1983, Ser. No. 539,457

Claims priority, application United Kingdom, Oct. 19, 1982, 8229811

Int. Cl.³ F23D *1/00*

U.S. Cl. 110—263 **5 Claims**



1. A burner for the partial combustion of a finely divided solid fuel comprising:

a burner housing having a central passageway terminating in a central fuel outlet;

a plurality of oxygen outlets substantially equal spaced and surrounding said fuel outlet;

a plurality of annular outlets, one said annular outlet surrounding each of said oxygen outlets, said annular outlets being coaxial with said oxygen outlets and both said oxygen and annular outlets being inclined at an angle to the axis of the fuel outlet;

a first conduit means, said first conduit means being coupled to said oxygen outlets; and

a second conduit means, said second conduit means being coupled to said annular outlets.

4,523,530

POWDERY COAL BURNER

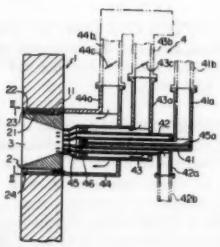
Motofumi Kaminaka, Wakayama; Hiroyuki Takashima, Ibaragi, and Katsuhiko Kaburagi, Wakayama, all of Japan, assignors to Sumitomo Metal Industries, Ltd., Osaka, Japan

Filed Feb. 22, 1983, Ser. No. 468,317

Claims priority, application Japan, Feb. 26, 1982, 57-28169

Int. Cl.³ F23D *1/02*

U.S. Cl. 110—264 **10 Claims**



1. A powdery coal burner which comprises a burner nozzle having an opening at the end of the burner body for injecting a combustionassisting gaseous fuel medium into a combustion area, means for supplying a combustion-assisting gaseous fuel medium to said burner nozzle, means for providing a swirling motion to said combustion-assisting gaseous fuel medium which is injected through said burner nozzle to said combustion area in a swirled state, an injection nozzle having an opening surrounding said burner nozzle opening for injecting coal toward said combustion area, means for supplying coal to said injection nozzle, a primary air outlet nozzle for forwardly injecting primary combustion air, said primary air outlet nozzle having an opening surrounding said opening of said injection nozzle for the powdery coal, means for supplying primary combustion air to said primary air outlet nozzle, and means for providing a swirling motion to said primary combustion air.

4,523,531

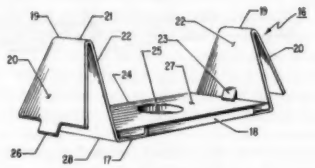
MODULAR FURNACE LINING HAVING MECHANICALLY INTERLOCKING ATTACHMENT MEANS

William Bishara, Niagara Falls, N.Y., assignor to Kennecott Corporation, Cleveland, Ohio

Filed Feb. 22, 1984, Ser. No. 582,402

Int. Cl.³ F23M *5/00*

U.S. Cl. 110—336 **7 Claims**



1. A modular furnace lining comprising:

a. a clip having a centrally located base portion adapted to be fastened to a surface of a furnace, the clip including a pair of major resilient projections which extend away from its base portion and the interior surface of the furnace toward the interior of the furnace when the clip is installed;

b. a module including a hot face adapted to be presented to the interior of a furnace and a cold face adapted to be presented to an interior surface of a furnace, the module being formed of ceramic fiber insulation mat secured to a tray adjacent to the cold face of the module; said tray including a bottom portion having a plurality of openings of such size and arrangement that they are capable of interlocking engagement with the major projections of the clip;

c. resilient means for interlocking engagement included between the tray and the clip which is actuated solely by positioning the tray of the module over the projections of the clip and forcing the tray of the module towards the base portion of the clip; said major projections being elastically flexed as the tray is forced thereover.

4,523,532

COMBUSTION METHOD

Michael P. Moriarty, Simi Valley, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

Division of Ser. No. 344,067, Feb. 2, 1982, which is a continuation-in-part of Ser. No. 239,943, Mar. 3, 1981, abandoned. This application Jan. 17, 1984, Ser. No. 571,963

Int. Cl.³ F23D *1/00*

U.S. Cl. 110—347 **5 Claims**

1. A method for the entrained-flow combustion of a carbon-, nitrogen- and sulfur-containing fuel for substantially reducing

emission of gaseous sulfur compounds and nitrogenous compounds formed during the combustion of the fuel with a substoichiometric amount of oxygen-comprising;

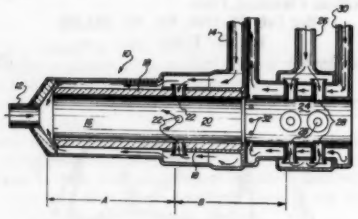
introducing said fuel, an inorganic alkaline absorbent and an oxygen-containing gas into a first combustion sulfur capture zone of an entrained-flow combustor to form a fluent mixture therein of fuel and absorbent entrained in said gas,

the oxygen being present in said zone in an amount to provide from about 25%–40% of the total stoichiometric amount required for the complete combustion of the fuel,

the inorganic alkaline absorbent being present in an amount to provide a molar ratio of alkaline absorbent to sulfur compounds of from about 1.0:1 to 3.0:1, said ratio including any alkaline absorbents contained in the fuel;

reacting said fuel and absorbent entrained in said oxygen-containing gas by maintaining them in said zone at a temperature from about 1000°–1800° K. for a time sufficient

(a) to gasify at least about 75% of the carbon content of the fuel and substantially all of the sulfur in a fuel,



(b) to combust the gasified fuel and oxygen to produce a fuel-rich stoichiometry in the gas-phase, and

(c) to react in excess of about 70% of the fuel sulfur with the inorganic alkaline absorbent to form a solid alkaline sulfide compound

introducing the resultant combustion mixture into a second combustion zone;

maintaining said mixture at a temperature in the range of 1800° K.–2500° K. in said second combustion zone while introducing additional air in an amount to provide about 45%–75% of the total stoichiometric amount of air required for complete combustion of the fuel;

maintaining said mixture including said alkaline sulfide compound, at said temperature for a time sufficient to reduce said nitrogenous compound content to a desired level; and

discharging said mixture having a substantially reduced gaseous sulfur compound and nitrogenous compound content.

4,523,533

FORCE TRANSFER MEANS

George M. Toman, Chicago, Ill., assignor to Union Special Corporation, Chicago, Ill.

Continuation of Ser. No. 904,203, May 9, 1978, abandoned. This application Jun. 8, 1982, Ser. No. 386,366

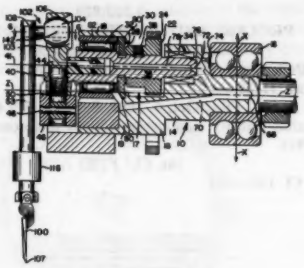
The portion of the term of this patent subsequent to Feb. 22, 2000, has been disclaimed.

Int. Cl.³ D05B *57/32*

U.S. Cl. 112—199 **6 Claims**

5. A sewing machine having in combination looper means, a Cardan gear mechanism means having an output centerpoint movable in two dimensions, a ring gear, a pinion gear operatively associated with said ring gear and a lever means arranged for circular swinging movement about the center axis of the pinion gear with said output centerpoint being located thereon, wherein the improvement comprises:

means operative for drivingly connecting the Cardan gear mechanism means and said looper means, said means operative being adapted to transmute the movement of the



output centerpoint movable in two dimensions to three dimensional movement at the tip of the looper means.

4,523,534

LOOPTAKER MECHANISM

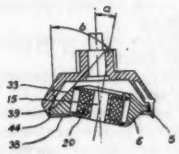
Leif U. Larsen, Huskvarna, Sweden, assignor to Husqvarna Aktiebolag, Huskvarna, Sweden

Filed Mar. 18, 1983, Ser. No. 476,537

Claims priority, application Sweden, Mar. 26, 1982, 8201950

Int. Cl.³ D05B *57/08, 57/26*

U.S. Cl. 112—231 **7 Claims**



1. In a looptaker mechanism for a zig-zag sewing machine having a hook ring supported on a shaft a sewing machine needle having an eye, the hook ring having a hook tip mounted to cooperate with the sewing machine needle, the hook tip being arranged to take an upper thread from the needle, and a bobbin holder for an under thread bobbin journalled in the hook ring; the improvement wherein the bobbin is mounted in the bobbin holder with its axis forming an angle greater than 0 to the axis of said shaft, said hook ring having a bearing surface in a plane perpendicular to said shaft, said bobbin holder having a bearing flange journalled in said bearing surface, the axis of said bobbin being parallel to a plane normal to said needle.

4,523,535

STITCH CHAIN CUTTER FOR SEWING MACHINES

James Blackburn, Rte. 1, Box 476, Boomer, N.C. 28606

Filed Jul. 30, 1984, Ser. No. 635,811

Int. Cl.³ D05B *65/02, 65/06*

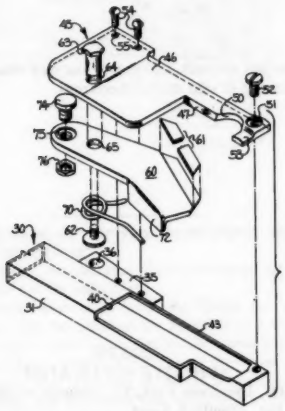
U.S. Cl. 112—288 **7 Claims**

1. A stitch chain cutting device for a sewing machine including needle means for forming stitches in fabric and forming a stitch chain between successive pieces of fabric, and feed dog means reciprocating in timed relationship with said needle means for moving the fabric in a horizontal plane and past said needle means, said stitch chain cutting device comprising

a. suction housing means including a forward end having a suction inlet positioned downstream of said needle and feed dog means for drawing the stitch chain into said suction inlet,

b. fixed knife blade means disposed adjacent said suction inlet and downstream of said needle and feed dog means, said fixed knife blade means being disposed in a horizontal plane and including a horizontal blade support plate fixed on the forward upper surface of the forward end portion of said suction housing means, said fixed knife blade plate further including a portion extending outwardly beyond one side of said suction housing means,

c. movable knife blade means disposed in parallel relationship with said fixed knife blade means and including a sharpened first end portion cooperating with said fixed knife blade means, and an opposite free end,



d. pivot means supporting the medial portion of said movable knife blade means on said outwardly extending portion of said fixed knife blade plate,

e. adjustable biasing means positioned between said free end of said movable knife blade means and said fixed knife blade means and being operable for biasing said sharpened end portion of said movable knife blade means into cutting engagement with said fixed knife blade means, and

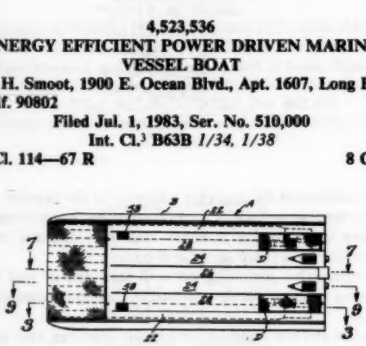
f. cam means supported on said feed dog means for engaging and moving said movable knife blade means in a cutting movement relative to said fixed knife blade means with each reciprocation of said feed dog means.

4,523,536

ENERGY EFFICIENT POWER DRIVEN MARINE VESSEL BOAT

Mark H. Smoot, 1900 E. Ocean Blvd., Apt. 1607, Long Beach, Calif. 90802

Filed Jul. 1, 1983, Ser. No. 510,000
Int. Cl.³ B63B *1/34, 1/38*
U.S. Cl. 114—67 R **8 Claims**



1. A water jet propelled boat that has a rigid elongate rectangular shape that is defined by a downwardly and rearwardly curving bow of substantially the width of said hull that merges into a flat bottom, a transom, a pair of side walls that extend below said bottom and outwardly from said bow to define a pair of keel members; a pair of outer and inner laterally spaced parallel sponsons that project downwardly from said bottom and originate rearwardly from said bow and terminate adjacent said transom, with each of said otuer and inner sponsons cooperating to define an outer longitudinal channel therebetween and said inner pair of sponsons defining a central longitudinal channel therebetween, with said boat capable of being operated in a first mode in which the wetted area of said hull is in a configuration substantially defined by the shape of said bow, bottom, pair of sidewalls and said pairs of outer and inner sponsons, and said boat capable of being operated in additional modes in which the configuration of the portion of said hull that is wetted is altered by the operator of said boat relative to the wave condition of the body of water on which the boat is traveling as well as the rate of travel to optimize the effeciency of the operation of said boat, said boat being characterized by:

a. first inflatable bag means secured to said hull to extend downwardly and rearwardly over said bow in a flat configuration when not inflated as occurs when said boat is operated in said first mode;

b. second inflatable bag means secured to said hull and disposed within said pair of outer channels adjacent said transom that are in a flat configuration when not inflated as occurs when said boat is operated at said first mode;

c. pressurized air generated means on said boat;

d. first, second and third air ducts in communication with said first and second inflatable means and at least one opening in said bottom adjacent said bow that communicates with said central channel, with pressurized air discharged into said central channel flowing rearwardly therein as a cushion of air bubble to lessen the friction of said hull with the body of water in which it is moving;

e. vertically adjustable means adjacent said transom and in longitudinal alignment with said central channel for selectively increasing or decreasing the resistance encountered by sad air bubbles in flowing rearwardly from said central channel to vary the draft of said boat; and

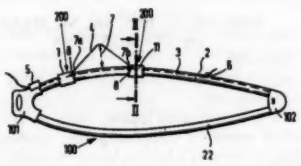
f. first valve means for varying the rates of flow of pressurized air from said pressurized air generating means to expand said first and second inflatable bag means and alter the contour of the portion of said hull that is wetted by the water on which said boat is traveling, with said altered contour being one that permits said boat to move forwardly through said body of water on which it floats on said bubbles of air with increased fuel effeciency.

4,523,537

TWIN OR FORKED BOOM FOR A SAILING SURFBOARD

Adelheid Kowol, Gravensteinstrasse 8, D-2400 Lübeck 1, Fed. Rep. of Germany

Filed Jan. 28, 1983, Ser. No. 462,099
Claims priority, application Fed. Rep. of Germany, Aug. 3, 1982, 3228929; Nov. 25, 1982, 3243539
Int. Cl.³ B63B *15/00*
U.S. Cl. 114—97 **3 Claims**



1. An apparatus adapted to connect first and second portions of a substantially trapezoidal member to at least one twin tube of a twin boom, said trapezoidal member having a normally slack portion spaced at an adjustable spacing from said at least

one twin tube, and including first and second end portions, the twin boom being used in connection with a sailing surfboard, comprising in combination

first and second trapezoidal member engagement means slideably connected to said first and second trapezoidal member portions, respectively, each trapezoidal member engagement means including a sleeve, at least one of the sleeves being shaped as an approximately U-shaped clamping profile body defining profile member legs, and, accompanied by the formation of a trapezoidal member passage opening is adapted to be closed by means of a screw holding together the profile member legs, said trapezoidal member engagement means being adapted to slideably engage said at least one twin tube,

a wedge-formed clip connected to said first end portion, and adapted to be disposed on said at least one twin tube, said second end portion being adapted to be connected to said at least one twin tube at a distance from said clip,

whereby said clip serves to adjust and fix the spacing of said normally slack portion from said at least one twin tube.

4,523,538

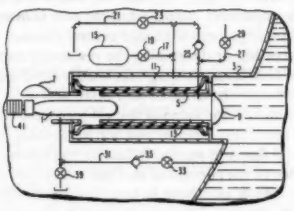
TORPEDO LAUNCHER

Martin Hollmann, Cupertino, Calif., and Francis J. Waclawik, Bristol, R.I., assignors to Westinghouse Electric Corp., Pittsburgh, Pa. and The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jan. 7, 1983, Ser. No. 456,476

Int. Cl.³ F41F *3/08*

U.S. Cl. 114—238 **7 Claims**



1. A torpedo launcher comprising:

a torpedo tube into which a torpedo is inserted;

an enclosure adjacent said torpedo tube;

a sack disposed in said enclosure and disposed in fluid communication with said torpedo tube;

means for filling said torpedo tube and sack with water; and

means for rapidly supplying pressurized fluid to said enclosure to compress said sack and eject said torpedo from said torpedo tube.

4,523,539

BOAT ANCHOR

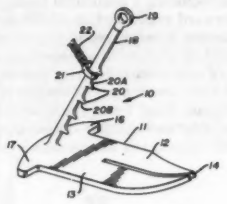
Gerald M. Granger, 3203 Hermosa Dr., Youngstown, Ohio 44511

Filed Dec. 15, 1983, Ser. No. 561,821

Int. Cl.³ B63B *21/46*

U.S. Cl. 114—299 **3 Claims**

1. An improvement in a boat anchor assembly, the improvement comprising means for selectively engaging a shank of said anchor in a predetermined manner with an anchor line, said boat anchor assembly comprising the combination of said anchor line, a sleeve of a known length movably positioned on said shank, said line attached to said sleeve, said shank extending at an obtuse angle from the base of said anchor, said base defining a pair of flukes, said means for selectively engaging said shank including said sleeve and line and a plurality of configurations spaced longitudinally on said shank and extending outwardly therefrom and toward said flukes, said configurations defining right angular surfaces in opposed relation to said base and a plurality of curved surfaces in oppositely disposed relation thereto, and means on said shank preventing disengagement of said sleeve therefrom.



4,523,540

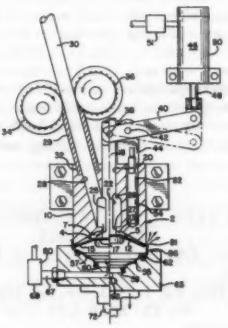
ADHESIVE APPLICATOR

John Walter, Evergreen Park, Ill., assignor to The Continental Group, Inc., Stamford, Conn.

Filed Apr. 12, 1982, Ser. No. 367,507

Int. Cl.³ B05C *7/02, 5/02*

U.S. Cl. 118—63 **5 Claims**



1. A mechanism for applying adhesive to the interior of an axially extending surface of a can component comprising:

a valve body having a lower end with concave cavity bounded by a sharp peripheral edge,

a flexible valve plate aligned with said end of said body having a peripheral lip disposed in closing relation to said edge,

said plate and body defining a metering chamber, inlet means in said body communicating with said chamber,

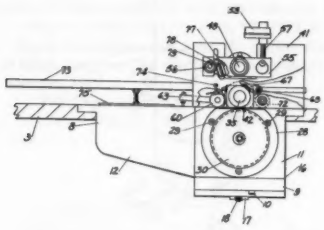
means for providing a source of flowable adhesive to flow through said inlet means into said chamber, and

means for flexing said plate for said adhesive into said metering chamber and for compressing the adhesive within said chamber to exhaust the adhesive from between said edge and lip radially onto said surface.

4,523,541
APPARATUS FOR APPLYING THERMOPLASTIC ADHESIVE TO FLEXIBLE DIE-CUT PARTS

D. Bruce Freeman; Bernard G. Kesse, both of Cincinnati, Ohio, and Philip P. Thiel, Ft. Mitchell, Ky., assignors to The Louis G. Freeman Company, Erlanger, Ky.

Division of Ser. No. 464,156, Feb. 7, 1983, Pat. No. 4,468,418.
This application Jul. 23, 1984, Ser. No. 614,745
Int. Cl.³ B05C *1/00*
U.S. Cl. 118—202 15 Claims

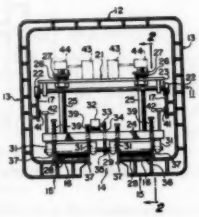


1. An apparatus for applying thermoplastic adhesive to a die-cut part comprising:
- a frame having an enlarged, closed cavity which serves as a reservoir for the adhesive;
- heater means associated with the frame for melting the adhesive and maintaining the adhesive in a molten state;
- a mixing roll rotatably attached to the frame and located, at least partially, within the cavity of the frame;
- an applicator roll rotatably mounted above and parallel to the mixing roll such that the applicator roll can pick up adhesive from the surface of the mixing roll, the applicator roll having a pattern of indentations and a series of spaced, narrow circumferential grooves in its surface;
- primary wiper means adjacent the applicator roll for removing excess adhesive from the outer surface and grooves of the applicator roll;
- a pressure roll rotatably mounted above the applicator roll;
- stripping means associated with the grooves in the applicator roll for guiding the part away from the applicator roll after the adhesive has been applied; and
- drive means for rotating the mixing roll, applicator roll and pressure roll.

4,523,542
PAVING APPARATUS FOR A TRAVELLING PATH FOR VEHICLES OF GUIDE RAIL SYSTEM

Jumpei Imahori, and Yutaka Sugie, both of Kobe, Japan, assignors to Sumitomo Gomu Kogyo Kabushiki Kaisha, Kobe, Japan

Filed Jan. 28, 1983, Ser. No. 462,035
Claims priority, application Japan, Jan. 29, 1982, 57-13120
Int. Cl.³ B05C *11/02*
U.S. Cl. 118—663 16 Claims

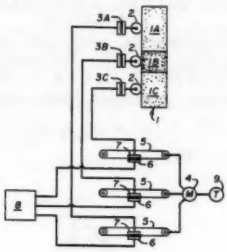


1. A paving apparatus for paving pavement materials on left and right travelling paths of a rail for a guiding system vehicle of the type having driving wheels which travel on surfaces of the left and right travelling paths and guide wheels which travel along a pair of guide rails, the apparatus comprising: a bogie for travelling along the upper edges of the pair of guide rails, a base plate adjustably suspended from said bogie so that the height thereof may be adjusted, a pair of paving means supported on the base plate so as to oppose the surfaces of the left and right travelling paths, and level detecting means for detecting the height of the base plate comprising means indicative of an execution reference line provided on at least one guide rail and means cooperating with said indicating means to detect the height of the base plate, whereby the pavement materials can be simultaneously paved on the respective travelling road surfaces by the pair of left and right paving means while the bogie moves along the upper edges of the guide rails.

4,523,543
ASPHALT SHINGLES - COLOR BLEND DROP SEQUENCE RANDOMIZED BY DEPOSITION MEANS CONTROLLED BY RANDOM SIGNAL GENERATOR TO OBVIATE STRIPES ON ROOF

Thomas R. Brady, and Lester C. Benner, both of Newark, Ohio, assignors to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed Jan. 3, 1984, Ser. No. 567,589
Int. Cl.³ B05B *12/02*
U.S. Cl. 118—697 4 Claims



1. Apparatus for depositing granules onto a moving substrate comprising:
- (a) a random signal generator;
- (b) a signal emitter actuated by said random signal generator;
- (c) a sensor receptive to signals emitted by said signal emitter;
- (d) a granule container;
- (e) discharging means for discharging granules from said granule container; and
- (f) means for actuating said discharging means responsive to signals from said sensor.

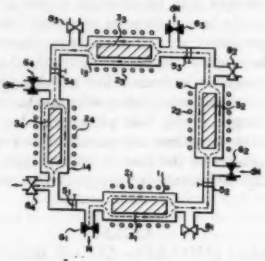
4,523,544
APPARATUS FOR GLOW DISCHARGE DEPOSITION OF A THIN FILM

Nozomu Harada, Yokohama; Hiroshi Ito, Tokyo, and Toshikazu Adachi, Yokohama, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Mar. 5, 1984, Ser. No. 586,450
Claims priority, application Japan, Mar. 10, 1983, 58-39545
Int. Cl.³ C23C *13/08*
U.S. Cl. 118—702 6 Claims

1. An apparatus for forming a thin film on a substrate by the decomposition of a compound gas, containing a target thin film component, by means of glow discharge, which further comprises:
- a main body having a plurality of discharge unit chambers, each provided with a glow discharge generating means

and a space for housing the substrate and connected in a loop via chamber-connecting portions, sets of gas supply valves and gas discharge valves being connected to the chamber-connecting portions; and



means for sequentially switching on and off said gas supply valves and said gas discharge valves every time a predetermined period of time has elapsed.

4,523,545

APPARATUS FOR REMOVING A MILKING SET OF A MILKING MACHINE, PARTICULARLY FOR A COW-SHED

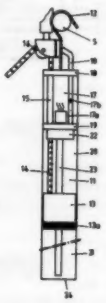
Jan Kummer, Leeuwarden, Netherlands, assignor to Kummer Electronics B.V., Leeuwarden, Netherlands

Filed Jun. 17, 1983, Ser. No. 505,211

Claims priority, application Netherlands, Jun. 17, 1982, 8202453

Int. Cl.³ A01J *7/00*

U.S. Cl. 119—14.08 **9 Claims**



1. Apparatus for removing a milking cluster from a milking cow, said cluster being connected to the milk line and the vacuum line of an automatic milking machine, comprising a cylinder suspended at one end in a substantial vertical direction and closed at its bottom end, a piston dividing said cylinder into an upper space and a lower space, a lifting cord having one end attached to the upper face of said piston and extending axially outward of the one end of cylinder and thence downwardly over at least one guide means and connected at the other end to said milking cluster, a vacuum tube connectable to said vacuum line and extending axially into said cylinder and sealingly past said upper space into communication with said lower space, electronic control means responsive to the flow of milk through said milk line, and valve means operable by said electronic control means to place said lower space under vacuum, said valve and said electronic control means being located in said cylinder outside of said upper and lower spaces.

4,523,546

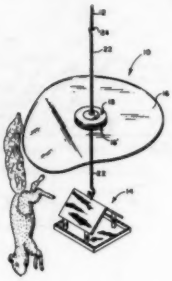
SQUIRREL-PROOF BIRD FEEDER

Peter A. Latham, Rye, N.H., assignor to Opus, Inc., Framingham, Mass.

Filed Jan. 4, 1983, Ser. No. 455,605

Int. Cl.³ A01K *39/01*

U.S. Cl. 119—51 R **10 Claims**



1. A predator-resistant bird feeder comprising:

a bird feeder having at least one feeder station;

a substantially horizontal flexible sheet free of any grippable portions and substantially larger in horizontal plan than the feeder so as to extend laterally beyond the feeder,

means for supporting the flexible sheet above the feeder station of the feeder for providing an overhead shield for the feeder;

said flexible sheet being constructed so as to be flexible under the influence of the weight of a predator applied to the sheet whereby the sheet will flex downwardly and define a downwardly extending surface for causing the predator to slide off the sheet and fall beyond the feeder.

4,523,547

DEVICE SUPPLYING CONSTANT AMOUNT OF FEED

Shingo Ogasawara, Kitakyushu, and Hideo Nakajima, Nagano, both of Japan, assignors to Kabushiki Kaisha Nakajima Seisakujo, Nagano, Japan

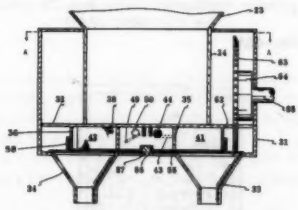
PCT No. PCT/JP83/00021, § 371 Date Sep. 22, 1983, § 102(e) Date Sep. 22, 1983, PCT Pub. No. WO83/02541, PCT Pub. Date Aug. 4, 1983

PCT Filed Jan. 25, 1983, Ser. No. 552,136

Claims priority, application Japan, Jan. 25, 1982, 57-9798

Int. Cl.³ A01K *5/00, 39/01*

U.S. Cl. 119—52 B **9 Claims**



1. A constant feed supplying device comprising:

a feed hopper;

an outlet opening in communication with said feed hopper;

a substantially horizontal partition mounted adjacent to said outlet opening and forming a closure therefor, said substantially horizontal partition includes a predetermined number of ports therein;

a rotary disk spaced a predetermined distance from said substantially horizontal partition, said rotary disk includes a plurality of through holes disposed therein;

at least one control plate positioned adjacent to said rotary disk for maintaining the level of feed on said rotary disk at a predetermined thickness; and

at least one discharge port in communication with a predetermined number of through holes in said rotary disk for discharging feed.

4,523,548

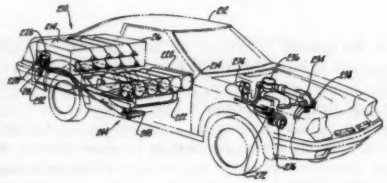
GASEOUS HYDROCARBON FUEL STORAGE SYSTEM AND POWER PLANT FOR VEHICLES

Larry J. Engel, Rochester, and John W. Turko, River Rouge, both of Mich., assignors to Michigan Consolidated Gas Company, Detroit, Mich.

Filed Apr. 13, 1983, Ser. No. 484,520

Int. Cl.³ F02B *43/00*

U.S. Cl. 123—1 A **45 Claims**



1. A low-pressure gaseous hydrocarbon fuel powered vehicle comprising:

means for storing a self-contained supply of a gaseous hydrocarbon fuel, said storing means containing a predetermined sorbent material for reducing the pressure at which a given amount of said gaseous hydrocarbon fuel is stored, said gaseous hydrocarbon fuel being stored at a maximum pressure less than approximately 500 psig (3450 kPa);

a prime mover having means for combining said gaseous hydrocarbon fuel with air to produce the mechanical energy therefrom necessary to move said vehicle;

means for conveying said gaseous hydrocarbon fuel to said storing means from a stationary source of said gaseous hydrocarbon fuel and for conveying said gaseous hydrocarbon fuel from said storing means to said combining means of said prime mover;

sorbent filter means associated with said conveying means for sorptively removing at least a portion of predetermined constituents from the flow of said gaseous hydrocarbon fuel to said storing means and for desorptively re-introducing at least a portion of said predetermined constituents to the flow of said gaseous hydrocarbon fuel from said storing means to said combining means of said prime mover; and

means associated with said conveying means for controlling the flow of said gaseous hydrocarbon fuel from said storing means to said combining means of said prime mover.

4,523,549

INTERNAL COMBUSTION ENGINE

James W. Lacy, Rte. 3, Box 436, Sanford, Fla. 32771

Filed Mar. 21, 1984, Ser. No. 591,800

Int. Cl.³ F02B *75/26*

U.S. Cl. 123—58 BC **15 Claims**

1. An internal combustion engine comprising:

an engine block having a plurality of extruded aluminum alloy modules. each module having a cylinder bore disposed therein;

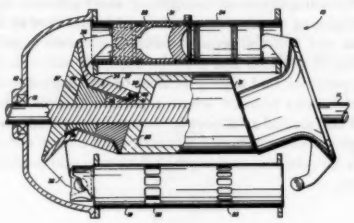
a shaft defining an axis of rotation and disposed in said engine block;

a unitary stiffener having a substantially higher stiffness modulus than the shaft, coaxially attached to the shaft so that an interior portion of the shaft will remain substantially rigid under bending loads;

a wobbler slug attached to said shaft stiffener and mounted at an angle to said shaft;

a pair of pistons slidably mounted in said engine block cylinder bore; and

a spider arm assembly having at least one single piece spider



arm connected to at least one portion, said spider arm assembly being operatively coupled to said wobbler slug; whereby movement of said piston will move said spider arm assembly against said wobbler slug to rotate said shaft in a wobbler engine.

4,523,550

VALVE DISABLING DEVICE FOR INTERNAL COMBUSTION ENGINES

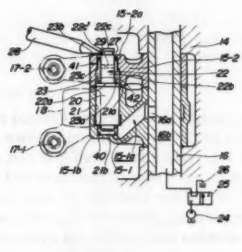
Shoichi Hondo, Tokyo; Yoshikatsu Nakano Kawagoe; Hirano Makoto, Asaka, and Masaaki Matsuura, Tokyo, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 20, 1984, Ser. No. 652,816

Claims priority, application Japan, Sep. 22, 1983, 58-174262; Sep. 22, 1983, 58-174263

Int. Cl.³ F01L *1/34*

U.S. Cl. 123—90.16 **11 Claims**



1. In a valve disabling device for use in a valve actuating mechanism of an internal combustion engine, said valve actuating mechanism having cam means, inlet valve means and exhaust valve means, at least one of which comprises a pair of valves, and first and second rocker arm means juxtaposed with each other and engaging said at least one of said inlet valve means and said exhaust valve means, one of said first and second rocker arm means engaging said cam means, said valve disabling device including an engaging member slidably disposed within a first axial bore formed in said first rocker arm means, said engaging member being projectable into and retractable from a second axial bore formed in said second rocker arm means in alignment with said first axial bore, an urging member slidably disposed within said second axial bore, urging means urging said urging member against said engaging member, and pressure applying means for hydraulically forcing said engaging member into said second axial bore against the urging force of said urging means, whereby said first and second rocker arm means are drivingly coupled together to cause said

at least one of said inlet valve means and said exhaust valve means to make valving motions in unison with each other, while when said pressure applying means is inoperative, said urging means causes said engaging member to recede from said second axial bore through said urging member to thereby disconnect said first and second rocker arm means from each other; the improvement comprising: biasing means for biasing said engaging member into said second axial bore to drivingly couple said first and second rocker arm means together irrespective of whether said pressure applying means is operative or inoperative, said urging member being adapted to assume a predetermined position where a portion thereof is projected out of said second axial bore for access from outside, when said engaging member is biased by said biasing means; and retaining means for retaining said urging member in said predetermined position.

4,523,551

VALVE ACTUATING DEVICE

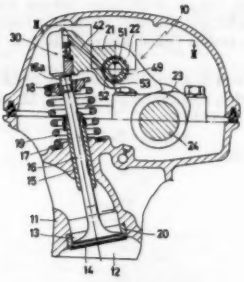
Fuminao Arai, Chiryu; Hisashi Kodama, Nagoya, and Takuro Ono, Chiryu, all of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed May 11, 1984, Ser. No. 609,248

Claims priority, application Japan, May 11, 1983, 58-070063[U]

Int. Cl.³ F01L *1/18*

U.S. Cl. 123—90.46 **3 Claims**



1. A valve actuating device for an internal combustion engine having cam and a valve stem, said device comprising:

a rocker arm receiving a load from said cam at one end and actuating said valve stem at the other end thereof;

a hydraulic valve lifter disposed in said rocker arm, said valve lifter including a cylinder formed in said rocker arm, a plunger member disposed in said cylinder and engaging one of said valve stem and said cam at one end thereof, a pressure chamber defined by the other end of said plunger member, a reservoir chamber formed in said rocker arm and a check valve allowing the flow of hydraulic fluid between said pressure chamber and said reservoir; and

a hollow rocker arm shaft pivotally supporting said rocker arm and having a first fluid supply passage therein, an air hole formed adjacent an upper portion of said hollow rocker arm shaft so as to communicate the interior of said hollow rocker arm shaft with the ambient atmosphere wherein said air hole is formed in a plug closing one end of said first fluid supply passage, and a fluid hole formed in said hollow rocker arm shaft on the side thereof opposite to said air hole;

said rocker arm being provided with an annular fluid passage which communicates with said first fluid supply passage through said fluid hole and a second fluid supply passage communicating said annular fluid passage with said reservoir chamber.

4,523,552

IGNITION SYSTEM FOR ENGINE

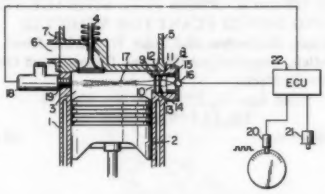
Shinichi Mukainakano; Tadashi Hattori; Minoru Nishida, all of Okazaki; Toru Mizuno, Aichi, and Tukasa Goto, Toyota, all of Japan, assignors to Nippondenso Co., Ltd., Kariya and Nippon Soken, Inc., Nishio, both of, Japan

Filed Apr. 28, 1983, Ser. No. 489,382

Claims priority, application Japan, Apr. 29, 1982, 57-71732

Int. Cl.³ F02P *23/04*

U.S. Cl. 123—143 B **8 Claims**



1. An ignition device for use with internal combustion engines and adapted for conducting a light beam into a combustion chamber of the engine and igniting a mixture of fuel and air, said device comprising a light emission means opened to the combustion chamber for emitting the light beam and a particle supply means disposed in opposed relation with the light emission means for supplying particles of a high light absorption index separately from said fuel, said particle supply means being adapted to emit the particles along the optical axis of the light beam into the combustion chamber, thereby permitting the particles to be heated at a suitable position within the combustion chamber and the heated particles to serve as an ignition source for igniting the mixture.

4,523,553

COMBUSTION ENGINE WITH BALANCING DEVICE

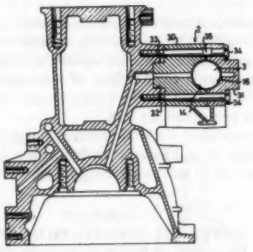
Ove Backlund, Västra Frölunda, Sweden, assignor to AB Volvo, Goteborg, Sweden

Filed Jun. 15, 1982, Ser. No. 388,714

Claims priority, application Sweden, Jun. 17, 1981, 8103814

Int. Cl.³ F16F *15/14*

U.S. Cl. 123—192 B **3 Claims**



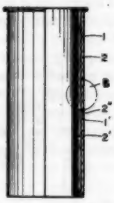
1. In a combustion engine of the piston type having an engine block and a crankshaft and at least one balancer shaft driven by the engine and arranged parallel to the crankshaft; the improvement comprising a separate housing in which the balancer shaft is mounted, the housing containing at least two axially-spaced bearings for the balancer shaft, and screws directly attaching the housing to the engine block at spaced locations adjacent said bearings, the cylinder block and the housing having a projection on one that extends into a mating recess on the other in a direction parallel to the screws and transverse to the balancer shaft.

4,523,554

METAL AND CERAMIC ASSEMBLY

Hideo Ryu, Tagata, Japan, assignor to Usui Kokusai Sangyo Kabushiki Kaisha, Shizuoka, Japan

Filed Oct. 14, 1983, Ser. No. 542,105
Claims priority, application Japan, Oct. 22, 1982, 57-185882
Int. Cl.³ F02F 1/00; F02B 77/02
U.S. Cl. 123—193 C 13 Claims



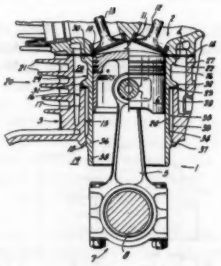
1. A metal and ceramic assembly comprising:
a first layer comprising a ceramic material;
a second layer on a surface of and unitary with said first layer, said second layer comprising said ceramic material having in addition contained therein an impregnant selected from the group consisting of (a) chromium oxide and (b) a mixture of silica, chromium oxide and fused alumina; and
a third layer comprising a metal material, said third layer being adjacent said second layer and being secured thereto by said impregnant.

4,523,555

RECIPROCATING INTERNAL COMBUSTION ENGINE WITH A WET CYLINDER SLEEVE INSERTED INTO A CYLINDER CRANK HOUSING

Hans Mezger, Freiberg, and Reinhard Konneker, Monsheim, both of Fed. Rep. of Germany, assignors to Harley-Davidson Motor Co., Inc., Milwaukee, Wis.

Filed Jul. 13, 1984, Ser. No. 630,515
Claims priority, application Fed. Rep. of Germany, Jul. 21, 1983, 3326320
Int. Cl.³ F01P 9/04
U.S. Cl. 123—193 C 9 Claims



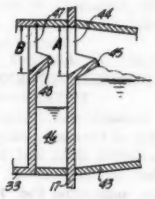
1. An internal combustion engine comprising a cylinder crank housing, a cylinder head and a cylindrical receptacle disposed inside of said crank housing, a wet cylinder sleeve having an upper portion, said upper portion being clamped between said cylinder head and said receptacle, said cylinder sleeve also having a lower portion extending in said receptacle, a coolant space between the upper portion of said sleeve and said receptacle having a broad cross-sectional area and wherein said area is formed at least in part by a reduced wall thickness of said sleeve at a location in said upper portion, and a gas tight air space located between said lower portion of said sleeve and said cylindrical receptacle.

4,523,556

FOUR-STROKE INTERNAL COMBUSTION ENGINE FOR OUTBOARD MOTORS

Masayuki Suzuki, Hamamatsu, Japan, assignor to Sanshin Kogyo Kabushiki Kaisha, Japan

Filed Jul. 16, 1984, Ser. No. 630,978
Claims priority, application Japan, Jul. 18, 1983, 58-129349
Int. Cl.³ F01M 1/00
U.S. Cl. 123—196 W 9 Claims



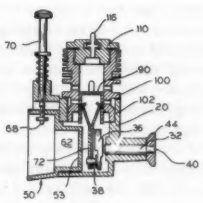
1. In a lubricating system for an outboard motor or the like having a power head containing an internal combustion engine, a lubricant sump positioned below said engine and adapted to contain lubricant for said engine, and a drain opening communicating said sump with the lubricating system of the engine for return of lubricant from said engine lubricating system to said sump by gravity when said outboard motor is operating in a normal, vertical position, the improvement comprising means defining a buffer volume for receiving lubricant from said lubricant sump when said engine is disposed in a non-vertical position for flow of lubricant from said lubricant sump to said buffer volume for return to said lubricant sump from said buffer volume when the engine is disposed in its normal vertical position.

4,523,557

MODEL AIRPLANE ENGINE

Duke Fox, 5305 Towson Ave., Ft. Smith, Ark. 72901

Filed May 4, 1984, Ser. No. 606,990
Int. Cl.³ F02B 61/04
U.S. Cl. 123—197 AB 12 Claims



1. An internal combustion engine comprising a crankcase and a fuel tank made of two casted pieceparts which nest together to form a closed crankcase housing and a fuel tank and also form matching openings formed in said two pieceparts to provide an air intake and a manifold leading from external air, past the fuel tank, and into the interior of said crankcase; a crankshaft journaled to rotate within said crankcase; a piston and connecting rod assembly consisting of two pieces, one of said two pieces being a connecting rod made from a generally "Y" shaped leaf spring rotatably mounted near the end of the stem of the "Y" on a throw on said crankshaft for undertaking a reciprocal motion within a cylinder responsive to a rotation

of said crankshaft; and the other of said two pieces being a piston having diametrically opposed connectors for snapping onto connectors at the top members of said "Y" shaped leaf spring each of said connectors being a projection and a recess.

4,523,558

INTERNAL COMBUSTION ENGINE AND CLUTCH THEREFOR

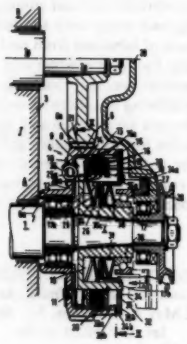
Paul Maucher, Sasbach, and Oswald Friedmann, Lichtenau, both of Fed. Rep. of Germany, assignors to Luk Lamellen und Kupplungsbau GmbH, Bühl, Fed. Rep. of Germany

Filed Dec. 8, 1983, Ser. No. 559,232

Claims priority, application Fed. Rep. of Germany, Dec. 8, 1982, 3245361

Int. Cl.³ F02D *25/04*

U.S. Cl. 123—198 F **21 Claims**



1. A split combustion engine, comprising a first engine unit having a first rotary member; a second engine unit having a second rotary member; and an accelerating clutch interposed between said units and arranged to transmit torque from said first to said second rotary member to thus accelerate said second rotary member, said clutch comprising coaxial first and second rotary components one of which is arranged to accelerate the other when the clutch is engaged, locking means including a pair of locking elements provided on and coaxial with said first component, said locking elements being angularly movable relative to one another and having first entraining means, said first component having second entraining means engageable with said first entraining means to prevent rotation of said locking elements with reference to said first component, said locking elements further having first protuberances and said second component having control means including complementary second protuberances engageable with said first protuberances for direct transmission of torque between said components, and means for moving said first protuberances axially of said components into engagement with said second protuberances, at least one of said entraining means and/or protuberances being arranged to change the angular positions of said locking elements relative to one another in response to axial movement of said first protuberances into engagement with said second protuberances.

4,523,559

INTERNAL COMBUSTION ENGINE

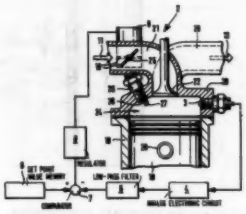
Reinhard Latsch, Vaihingen; Ernst Linder, Mühlacker, and Winfried Moser, Ludwigsburg, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Jul. 5, 1984, Ser. No. 628,054

Claims priority, application Fed. Rep. of Germany, Aug. 30, 1983, 3331115

Int. Cl.³ F02B *31/00*

U.S. Cl. 123—306 **13 Claims**



1. An internal combustion engine comprising at least one combustion chamber, at least one inlet conduit leading to said combustion chamber and having an adjustable means associated with said inlet conduit for varying charge flow patterns which act inside said combustion chamber to vary the combustion flame-propagation, an adjusting motor means adjusting said adjustable means, a regulator means acting upon said adjusting motor means, a set-point value transducer and an actual-value transducer associated with said regulator means, said actual-value transducer including a sensor connected to said combustion chamber for ascertaining combustion phenomena taking place in said combustion chamber, said set-point value transducer prescribing the instants for the occurrence of said phenomena, and said regulator means controlling said adjusting motor in accordance with the outputs of aid actual value transducer and said set-point value transducer.

4,523,560

INTAKE DEVICE OF AN INTERNAL COMBUSTION ENGINE

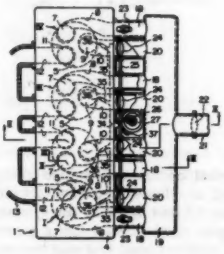
Katsuhiko Motosugi, and Yoshio Sasaki, both of Toyota, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Continuation of Ser. No. 326,264, Dec. 1, 1981, abandoned. This application Feb. 17, 1984, Ser. No. 580,288

Claims priority, application Japan, Dec. 2, 1980, 55-169048

Int. Cl.³ F02B *31/00*

U.S. Cl. 123—308 **12 Claims**



1. A multi-cylinder internal combustion engine having a cylinder head and a plurality of cylinders, each cylinder having a combustion chamber, a first intake valve arranged in the

combustion chamber, a first intake passage having an inlet and an outlet which is connected to the combustion chamber via the first intake valve, a second intake valve arranged in the combustion chamber, a second intake passage having an inlet and an outlet which is connected to the combustion chamber via the second intake valve, a common intake passage connected to the inlets of the first intake passage and the second intake passage, a first throttle valve arranged in the common intake passage, and a normally closed second throttle valve arranged in the second intake passage and opened when the engine load or the engine speed is increased beyond a predetermined level, wherein the improvement comprises a blind common connecting passage, a plurality of branch passages extending from the blind common connecting passage, each branch passage being open to said second intake passage of a corresponding cylinder at a location downstream of said second throttle valve of the corresponding cylinder, each of said branch passages having an opening arranged in the vicinity of a valve head of a corresponding second intake valve, directed to a gap formed between said valve head and a valve seat of said corresponding second intake valve, and directed tangentially to a circumferential wall of the corresponding combustion chamber, the second throttle valve of each cylidner being closed when a selectable one of the speed and load of the engine is below a predetermined level.

4,523,561

APPARATUS AND METHOD FOR CONTROLLING AIR AMOUNT UPON ENGINE START

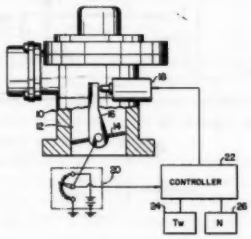
Tokuo Kosuge, Katsuta, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Jul. 21, 1983, Ser. No. 515,967

Claims priority, application Japan, Jul. 26, 1982, 57-128953

Int. Cl.³ F02D *33/02*

U.S. Cl. 123—339 **7 Claims**



1. An apparatus for controlling air amount during cranking of an engine to start said engine comprising:

an air intake conduit for supply of air to an internal combustion engine;

air amount control means for regulating amounts of air to be supplied to said internal combustion engine;

memory means stored with control data represensitive of predetermined amounts of air required during cranking to start said engine and corresponding to temperatures of said engine;

temperature detection means for detecting temperatures of said internal combustion engine and generating temperature signals;

opening detection means for detecting the opening of said air amount control means to produce an opening signal;

control means for reading a control data from said memory means on the basis of a temperature signal from said temperature detection means and examining the read out control data and said opening signal from said opening detection means to produce a drive signal on the basis of said control data when the opening signal from said opening detection means coincides with said control data under a predetermined relationship and to produce a drive signal on the basis of a correction signal for bringing the opening signal into coincidence with the control data under the predetermined relationship when said opening signal does not coincide with said control data under the predetermined relationship; and

drive means driven by the drive signal from said control means, for driving said air amount control means so as to supply to said internal combustion engine an amount of air required during cranking to start said engine.

4,523,562

METHOD FOR CONTROLLING THE FUEL METERING FOR AN INTERNAL COMBUSTION ENGINE

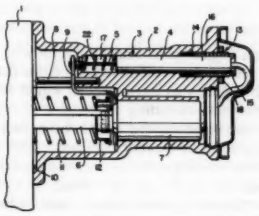
Martin Schnapper, and Ernst W. Hufendiek, both of Stuttgart, Fed. Rep. of Germany, assignors to Daimler-Benz Aktiengesellschaft, Fed. Rep. of Germany

Filed Jun. 27, 1983, Ser. No. 508,239

Claims priority, application Fed. Rep. of Germany, Jul. 5, 1982, 3225085

Int. Cl.³ F02D *31/00*

U.S. Cl. 123—357 **5 Claims**



1. A process for adjusting the actual fuel delivery volumes determined at a fuel injection pump for a Diesel internal-combustion engine having an electronic control unit for the control of the fuel injection, by means of a characteristic delivery volume line, to the fuel delivery volumes indicated by the control unit, said fuel delivery volumes, in each case, being proportional to the control path changes generated by the control unit by actuating signals at the actuating drive of the control rod of the injection pump and being detected by an electric displacement transducer coupled with the control rod and led to the control unit as electric signals, wherein

the control rod is adjusted to a gauge point (E) located on the characteristic delivery volume line, said gauge point (E) preferably being located in the area of the maximum fuel delivery volume, wherein

the output signal of the electric displacement transducer corresponding to the adjusted control rod position is compared with a desired voltage level fed in the control unit for the fuel delivery volume supplied in gauge point (E), and wherein,

in the case of a divergence between the output signal and the desired voltage level, the displacement transducer is adjusted relative to the control rod until the output signal of the displacement transducer coincides with the desired voltage level.

4,523,563

ELECTRONIC CONTROL SYSTEM FOR A FUEL PUMP

John H. Moore, Kingscote, and Ian J. Harvey, Cricklade, both of England, assignors to Lucas Industries public limited company, Birmingham, England

Filed Apr. 6, 1984, Ser. No. 597,257

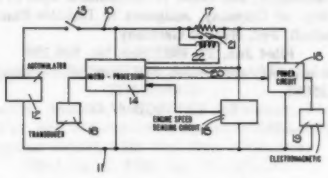
Claims priority, application United Kingdom, Apr. 30, 1983, 8311917

Int. Cl.³ F02D *1/12*

U.S. Cl. 123—359 **2 Claims**

1. An electronic control system for a fuel pump of an internal

combustion engine, the pump being of the type including an electromagnetically operable device which when energised ensures that the pump supplies fuel to the associated engine, the control system including a power circuit which controls the flow of current in the device and a control unit responsive to demanded and actual engine operating parameters for providing a control signal to said power circuit, the control system further comprising first and second terminals for connection to a source of electric supply by way of a manually operable switch, a resistor connected in series with one of said terminals and the power circuit, a relay having contacts connected in parallel with said resistor, said relay including a winding which is energised under the control of said control unit, to close said



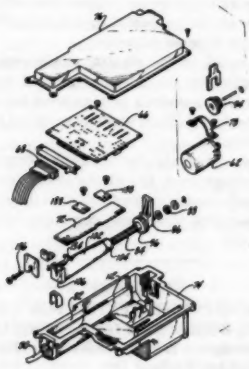
contacts, an engine speed sensing circuit which receives power from the end of the resistor remote from the supply terminal and which supplies an engine speed signal to the control unit, said control unit including means for checking the demand signal and the engine speed signal and acting when the engine speed signal exceeds a predetermined value while the demand signal is substantially zero, to deenergise said relay so that the voltage applied to the power circuit and the speed sensing circuit is reduced by said resistor, said voltage if reduced to below a stand-by level by a fault in the power circuit, causing the speed signal to become insufficient whereby the control unit acts to prevent reenergisation of the relay, the reduced current available when said contacts are open, being insufficient to maintain said valve closed.

4,523,564

ROAD AND ENGINE SPEED GOVERNOR

Harry D. Sturdy, Wilmington, N.C., assignor to Sturdy Truck Equipment, Inc., Wilmington, N.C.

Filed Jan. 20, 1983, Ser. No. 459,345
Int. Cl.³ F02D *11/10*
U.S. Cl. 123—361 **12 Claims**



1. The method of operating a governor for an internal combustion engine which has a throttle movable between an open throttle position and a close throttle position for regulating the flow of fuel to the engine, said governor being of the type comprising an overriding throttle closing means for limiting the movement of the throttle in the open throttle direction, said engine being drivingly coupled with a device which is to be governed at a predetermined governed speed and having a speed with a known relationship to the speed of the engine, said method comprising the steps of:

moving the overriding throttle limiting means to a reference position when the measured speed exceeds a predetermined value, said overriding throttle limiting means limiting the throttle position to a predetermined throttle position when in the reference position,

moving the overriding throttle limiting means at a predetermined slow speed in the close throttle direction when the speed is greater than the governed speed,

moving the overriding throttle limiting means at said slow speed in the open throttle direction when the speed is less than the governed speed,

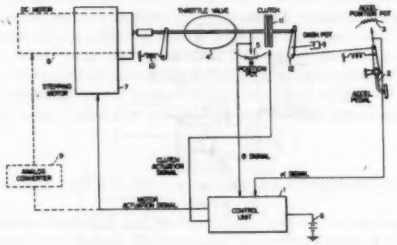
said slow speed being slow enough that the overriding throttle limiting means will move from its position at the time of speed measurement to a new position in a time interval at least as great as that required for the measured speed to change from its value corresponding to the position of the overriding throttle limiting means at the time of speed measurement to a new value corresponding to said new position of the overriding throttle limiting means.

4,523,565

CONTROL SYSTEM AND METHOD FOR A FUEL DELIVERY SYSTEM

Takashi Omitsu, Madison, Wis., assignor to Aisin Seiki Kabushiki Kaisha, Japan

Filed Mar. 30, 1984, Ser. No. 595,508
Int. Cl.³ F02D *11/10*
U.S. Cl. 123—399 **16 Claims**



1. A system for effecting either automatic or manual control of a fuel delivery system for delivering a variable quantity of fuel to the engine of a power delivery system, said system comprising:

command means for commanding a desired output power or torque from said engine;

measuring means for measuring the state of the fuel delivery system;

automatic control means operatively coupled to said command means and said measuring means for controlling the operation of said fuel delivery system as a function of the desired output power or torque commanded by said command means and the measured state of the fuel delivery system;

manual control means operatively coupled to said command means for manually controlling the operation of said fuel delivery system as a function of the desired output power or torque commanded by said command means; and

switching means for switching the control of said fuel delivery system from said automatic control to said manual control when both a first predetermined condition is detected and the state of the fuel delivery system as measured by said measuring means corresponds to an actual output power or torque which is substantially equal to the

desired output power or torque commanded by said command means.

4,523,566

KNOCKING CONTROL SYSTEM IN ENGINE

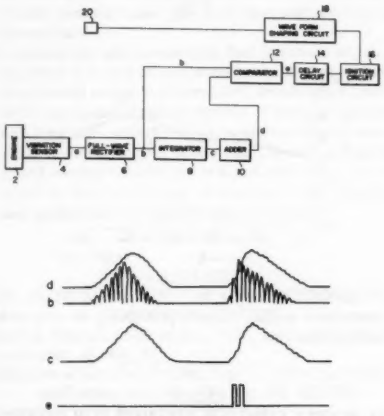
Tatsuo Kobayashi, Shizuoka, Japan, assignor to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Mar. 17, 1983, Ser. No. 476,338

Claims priority, application Japan, Aug. 24, 1982, 57-127865[U]

Int. Cl.³ F02P *5/04*

U.S. Cl. 123—425 **8 Claims**



1. A knocking control apparatus for a spark-ignition internal combustion engine, the apparatus comprising:

a vibration sensor responsive to engine vibrations, including vibrations due to knocking, for producing an alternating voltage engine vibration signal;

a rectifier, having an input connected to the vibration sensor and an output, for providing a rectified engine vibration signal from the sensor at the output of the rectifier;

an integrator having an input connected to the output of the rectifier, and an output for delivering an integrated value of the rectified engine vibration signal, the integrator having a charge time constant less than substantially five times the period from inception to maximum value of vibrations due to knocking and a discharge time constant short enough to reduce the integrator output substantially to zero between succesive ignition cycles;

an adder having an input connected to the output of the integrator and an output, the adder providing an offset voltage signal and summing said offset signal with the integrated engine vibration signal to produce a reference signal at the output of the adder;

a comparator having a first input connected directly to the output of the rectifier, a second input connected to the output of the adder, and an output, for comparing said rectified engine vibration signal with said reference signal, and for producing a knocking control pulse at the output of the comparator whenever the instantaneous level of said rectified engine vibration signal exceeds the reference signal; and

a delay circuit having an input connected to the output of the comparator and an output for delivering an ignition control signal to an ignition circuit of the engine for causing a delay in a spark ignition signal that is a function of the number of knocking control pulses per ignition cycle.

4,523,567

IGNITION TIMING CONTROL SYSTEM FOR INTERNAL-COMBUSTION ENGINE

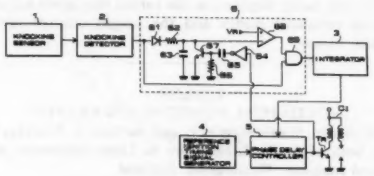
Toshio Iwata, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed May 13, 1983, Ser. No. 494,289

Claims priority, application Japan, May 14, 1982, 57-82597

Int. Cl.³ F02P *5/04*

U.S. Cl. 123—425 **3 Claims**



1. An ignition timing control system for an internal-combustion engine, comprising a knocking detector capable of providing a knocking detection signal having pulses proportional to the magnitude of the knocking of the internal-combustion engine; a phase delay limiter which integrates the pulses of said knocking detection signal in every ignition period to produce said knocking detection signal at the output terminal thereof when the integral of said knocking detection signal is smaller than a predetermined set value or to interrupt said knocking detection signal when said integral reaches said set value; an integrator which integrates the pulses of said knocking detection signal produced at the output terminal of the phase delay limiter; means to generate a reference ignition timing signal; and a phase delay controller for delaying the phase of said reference ignition timing signal in proportion to the output of the integrator.

4,523,568

CONTINUOUSLY OPERATING FUEL INJECTION SYSTEM

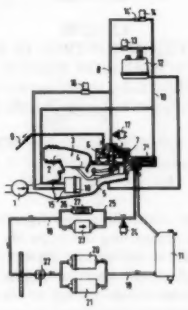
Heinz Dorsch, Weissach; August Hofbauer, Pforzheim, and Herbert Steinbeck, Hemmingen, all of Fed. Rep. of Germany, assignors to Dr. Ing. h.c.F. Porsche A.G., Fed. Rep. of Germany

Filed Oct. 13, 1983, Ser. No. 541,434

Claims priority, application Fed. Rep. of Germany, Oct. 13, 1982, 3237963

Int. Cl.³ F02M *39/00*

U.S. Cl. 123—453 **18 Claims**



1. A continuously operating fuel injection installation, comprising a suction pipe, air quantity measuring means for the through-flowing air quantity arranged in the suction pipe, a fuel quantity distributor means including a control piston

means for distributing the fuel to injection valve means, said air quantity measuring means acting on one end face of the control piston means, the other end face of the control piston means being acted upon by a control pressure line whose pressure is controlled by a warm-up regulator means, a return line leading from said warm-up regulator means to a fuel tank, height control pressure regulator means connected between said control pressure line and said return line in parallel to the warm-up regulator means electromagnetic valve means operatively connected with the warm-up regulator means and the height control pressure regulator means, said electromagnetic valve means being disposed in the return line upstream of the warm-up regulator means and the height control pressure regulator means.

4,523,569

LIQUID FUEL PUMPING APPARATUS

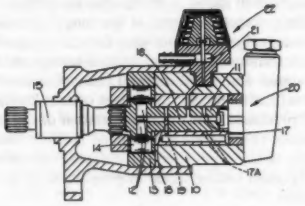
Alec H. Seilly, North Wembley, and Andrew E. Murray, London, both of England, assignors to Lucas Industries public limited company, Birmingham, England

Filed Oct. 11, 1983, Ser. No. 540,558

Claims priority, application United Kingdom, Oct. 21, 1982, 8230045

Int. Cl.³ F02M *39/00*

U.S. Cl. 123—458 **4 Claims**



1. A liquid fuel pumping apparatus for supplying fuel to an internal combustion engine, the apparatus comprising a plunger reciprocable within a bore, an outlet from said bore and through which fuel can flow during inward movement of the plunger, an electromagnetically operable spill valve which controls fuel flow through a passage connected to said bore and which during inward movement of the plunger can be closed to cause fuel flow through the outlet, and means responsive to the movement of the spill valve for providing signals indicative of the state of the valve, and a control circuit to which said signals are supplied, said control circuit controlling the operation of said valve.

4,523,570

FUEL INJECTION CONTROL IN INTERNAL COMBUSTION ENGINE

Yukio Suzuki; Kunihiko Sato, and Motoyasu Muramatsu, all of Toyota, Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Apr. 6, 1983, Ser. No. 482,710

Claims priority, application Japan, Apr. 7, 1982, 57-56739

Int. Cl.³ F02M *51/00*

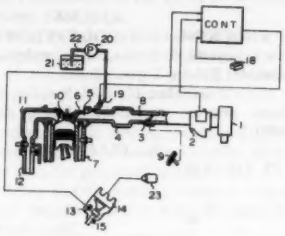
U.S. Cl. 123—478 **5 Claims**

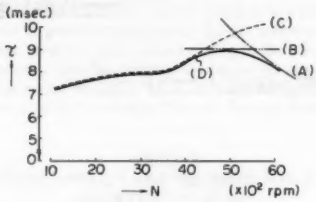
1. A method for controlling fuel injection in an internal combustion engine comprising the steps of:

using a control circuit for calculating a pulse width of a fuel injection signal on the basis of engine rotational speed, intake air amount measured by an air flow meter, and other engine running conditions;

establishing an upper limit value for the pulse width of the fuel injection signal on the basis of a maximum intake air amount and that amount per rotation multiplied by a predetermined constant;

generating fuel injection signals having a pulse width within said upper limit; and carrying out fuel injection by supplying said generated fuel injection signals to the internal





combustion engine, thereby preventing an over-rich air-fuel mixture.

4,523,571

FUEL SUPPLY CONTROL METHOD FOR INTERNAL COMBUSTION ENGINES AT ACCELERATION

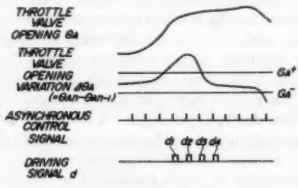
Akihiro Yamato, Shiki, and Noriyuki Kishi, Itabashi, both of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 13, 1983, Ser. No. 503,758

Claims priority, application Japan, Jun. 16, 1982, 57-103408

Int. Cl.³ F02M *51/02*

U.S. Cl. 123—492 **17 Claims**



1. A method for electronically controlling a fuel injection device for injecting fuel into an internal combustion engine, so as to supply a required quantity of fuel to said engine when it is accelerating, the method comprising the steps of:

(1) determining whether or not said engine is operating in a predetermined accelerating condition, each time a pulse of a control signal is generated with a predetermined constant pulse repetition period and independently of rotation of said engine;

(2) determining whether or not said engine is operating in a predetermined decelerating condition each time a pulse of said control signal is generated;

(3) determining whether or not said engine is in an operating condition requiring cutting off the fuel supply to said engine and also whether or not said engine is in an operat-

ing condition requiring interruption of said cutting-off of the fuel supply;

(4) determining whether or not a predetermined period of time has elapsed from the time said engine is determined to be in said operating condition requiring interruption of said cutting-off of the fuel supply;

(5) actuating said fuel injection device to effect fuel injections consecutively into said engine a predetermined number of times in synchronism with generation of pulses of said control signal, when it is determined in said step (1) that said engine is operating in said predetermined accelerating condition;

(6) setting the value of said predetermined number of times in said step (5) to different values between before the lapse of said predetermined period of time and after the lapse thereof; and

(7) interrupting said consecutive fuel injections of said step (5), when it is determined in said step (2) that said engine is operating in said predetermined decelerating condition before said predetermined number of times of consecutive fuel injections are completed, while continuing said consecutive fuel injections of said step (5) until said predetermined number of times are reached, so long at it is determined in said step (2) that said engine is not operating in said predetermined decelerating condition.

4,523,572

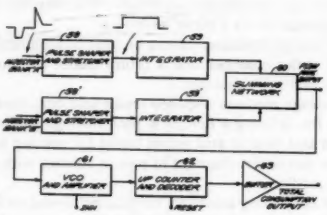
FUEL FLOW MONITOR FOR AN ELECTRONIC FUEL INJECTION CIRCUIT

Richard E. Staerzl, Fond du Lac, Wis., assignor to Brunswick Corporation, Skokie, Ill.

Continuation of Ser. No. 414,881, Sep. 3, 1982, abandoned. This application Aug. 10, 1984, Ser. No. 639,386

Int. Cl.³ F02M *51/00*

U.S. Cl. 123—494 **5 Claims**



1. In a multi-cylinder internal-combustion engine having an electronically controlled fuel-injection system wherein a pulse generator provides fuel-injection control pulses of time duration proportioned to engine speed and to other factors including desired throttle setting, the pulses each having a duration which is at all times a small fraction of the duration of a full cycle of operation of a given cylinder of the engine, and wherein an electronic fuel flow rate monitor provides indications of fuel flow rate and total engine fuel consumption, the electronic fuel flow rate monitor comprising: pulse shaper means responsive to the fuel injection control pulses for generating an output pulse having a constant amplitude and a predetermined duration for each of the fuel injection control pulses, accumulator means responsive to said output pulses for providing a first signal having an amplitude which is indicative of fuel flow rate, means responsive to said first signal for generating a second signal having a frequency which is dependent on the amplitude of said first signal, and means responsive to said frequency-dependent second signal for providing a third signal having an amplitude which is indicative of total engine fuel consumption.

4,523,573

APPARATUS FOR PROPELLING AN INFLATED BALL

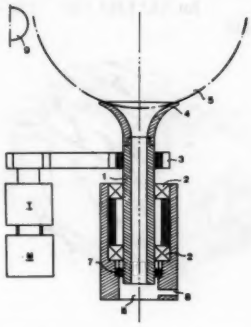
Georges Defosse, Barchon, and Joseph Hensenne, Haccourt, both of Belgium, assignors to Ateliers de Constructions Electriques de Charleroi, Charleroi, Belgium

Continuation-in-part of Ser. No. 147,597, May 7, 1980, abandoned. This application Jul. 9, 1981, Ser. No. 281,863

Claims priority, application European Pat. Off., May 7, 1979, 79200221.4

Int. Cl.³ F41B *3/00*

U.S. Cl. 124—41 R **14 Claims**



1. An apparatus for propelling inflated balls by elastic impact, comprising:

a striking mass for travelling through a predetermined elongated path and striking a ball to propell a ball;

a ball support for holding a ball in the path of said striking mass;

means for imparting rotational motion to a ball when propelled by producing relative rotation between said ball support and said mass prior to said mass striking a ball, thereby causing a ball to travel in an arced trajectory; and

control means for selecting the direction of rotation and rotational velocity imparted to a ball by said rotational motion imparting means.

4,523,574

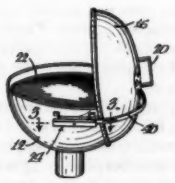
SUPPORT STRUCTURE FOR GRILL COVER

Erich J. Schlosser, Lindenhurst, Ill., assignor to Weber-Stephen Products Co., Palatine, Ill.

Filed Aug. 11, 1983, Ser. No. 522,109

Int. Cl.³ A47J *37/00*

U.S. Cl. 126—25 R **5 Claims**



1. In combination with an outdoor cooking kettle having a generally hemispherical lower portion and a removable cover with said lower portion having diametrically-opposed handles extending from an outer surface thereof and each handle having a gripping portion spaced from said outer surface, the improvement of a cover support on said lower portion, said cover support comprising an arcuate member connected to said handles and extending between said gripping portions and spaced from said outer surface to define a slot for receiving

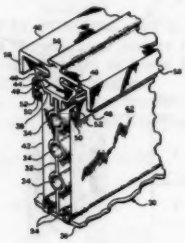
said cover, the weight of said cover producing a wedging action with said hemispherical lower portion and said cover support so that said cover is retained in an upright position.

4,523,575

COLLECTOR MEANS FOR SOLAR ENERGY COLLECTING SYSTEM

Ronnie D. Nikkel, and Paul M. L'Esperance, both of Bartlesville, Okla., assignors to Phillips Petroleum Co., Bartlesville, Okla.

Division of Ser. No. 507,397, Jun. 24, 1983, Pat. No. 4,465,057.
This application Jun. 11, 1984, Ser. No. 619,660
Int. Cl.³ F24J *3/02*
U.S. Cl. 126—418 **9 Claims**



1. In a solar energy collector system, including; a receiving means, having an extended surface area and adapted to receive solar radiation and focus the same to a substantially smaller area, and a collector plate, having a substantially smaller surface area than said receiving means, having one edge mounted on said receiving means in a position to have at least one side exposed to and receive the thus focused solar radiation and adapted to absorb said focused solar radiation, the improved means for insulating the thus exposed surface of said absorber plate, comprising:

(a) a supply roll of a transparent, flexible glazing sheet material;

(b) cap means mounted on the other edge of said absorber plate, opposite the edge thus mounted on said receiving means, and extending beyond said exposed surface of said absorber plate;

(c) means for rotatably mounting said supply roll on one of (1) the thus extended cap means and (2) the receiving means adjacent one edge of said absorber plate and spaced therefrom; and

(d) means for detachably coupling the free end of said glazing sheet material on the other of (1) the thus extended cap means and (2) the receiving means adjacent the other edge of said absorber plate and spaced therefrom;

(e) whereby an exposed portion of said glazing sheet material is mounted parallel to and spaced from said exposed surface of said absorber plate in the path of said focused solar radiation; and

(f) said exposed portion of said glazing sheet material can be removed and a fresh portion of said glazing sheet material can be withdrawn from said supply roll and mounted parallel to said absorber plate to replace the thus removed, exposed portion of said glazing sheet material.

4,523,576

SOLAR HEATING APPARATUS WITH SOLAR HEAT RECEIVING MEANS AND HEAT STORAGE AND DISTRIBUTION MEANS

Dale T. Waschow, Rte. 2, Box 79 B, Eagle, Wis. 53119

Filed Sep. 6, 1983, Ser. No. 529,340
Int. Cl.³ F24J *3/02*
U.S. Cl. 126—422 **12 Claims**

1. A solar heating system comprising

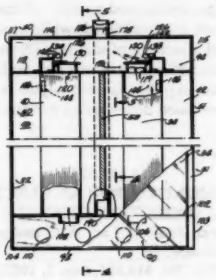
solar heating means for solar heating air flowing therethrough, said solar heating means including

means defining plurality of separate, elongated heating chambers in side-by-side relationship for receiving solar energy, a separate air inlet chamber adjacent one end of said heating chambers and having an opening for admitting fresh air into said inlet chamber, and a separate air outlet chamber adjacent the opposite end of said heating chambers,

at least one air heating tube extending through each of said heating chambers with one end communicating with said inlet chamber and the opposite end communicating with said outlet chamber,

valve means for each of said heating tubes and movable between open and closed positions to respectively permit and prevent air flow through the respective heating tube,

means for moving each of said valve means to the open and closed positions in response to the temperature inside the



respective heating tube being respectively above and below a predetermined level; and

heat storage and distribution means for storing and distributing heated air to a room including

a heat storage container having an inlet communicating with said outlet chamber and a return outlet communicating with said inlet chamber,

heat storage medium disposed inside said container,

means for defining a first flow path through said container from said inlet to said return outlet for causing heated air from said outlet chamber to pass in contact with and heat said medium,

first air circulating means for circulating heated air from said outlet chamber through said first flow path, and

means for energizing and de-energizing said first air circulating means in response to the air temperature in said outlet chamber being respectively above and below a predetermined level.

4,523,577

SEMI-TRANSPARENT SOLAR ENERGY THERMAL STORAGE DEVICE

John F. McClelland, Ames, Iowa, assignor to Iowa State University Research Foundation, Inc., Ames, Iowa

Filed Aug. 4, 1982, Ser. No. 405,067
Int. Cl.³ F24J *3/02*
U.S. Cl. 126—430 **1 Claim**

1. A visually transmitting solar energy thermal storage device comprising,

a visually transmitting exterior panel having interior and exterior surfaces,

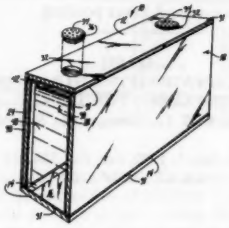
a visually transmitting solar absorber panel located interiorly of said exterior panel and substantially parallel thereto,

sealing means between the exterior panel and absorber panel for forming a liquid-tight containment chamber therebetween,

a visually transmitting thermal storage liquid substantially filling said containment chamber,

a low vapor pressure liquid layer that floats on and seals the top surface of the thermal storage liquid,

a heat mirror substantially covering a surface of said exterior panel for reducing radiative heat transfer through said device,



said sealing means comprising peripheral containment walls having a filler hole in an upper portion thereof, and further comprising a porous filter plug in said hole for preventing the introduction of contaminants into the containment chamber,

said thermal storage liquid including an algicide, and

said thermal storage liquid including a chelating compound for keeping metal ions in solution.

4,523,578

SOLAR RADIATION COLLECTOR

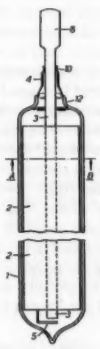
Faramarz Mahdjuri Sabet, via S. Sebastiano 33, I-24100 Bergamo, Italy

Filed Jul. 30, 1982, Ser. No. 403,421

Claims priority, application United Kingdom, Aug. 4, 1981, 81283829; Apr. 14, 1982, 8210819

Int. Cl.³ F24J *3/02*

U.S. Cl. 126—443 **8 Claims**



1. A solar collector which comprises a radiation-absorbing plate and a tube assembly having at least one metal tube for containing a heat transfer medium, the plate being in thermal contact with the tube and being enclosed within a radiation-transparent glass envelope sealed in vacuum-tight fashion, through a metal collar, to said tube assembly; wherein the collar includes a portion of truncated conical shape, the smaller diameter end being sealed around the periphery of the metal tube assembly by a cylindrical portion, and the large diameter end being sealed to the glass envelope, and wherein the thickness of the collar reduces at the larger diameter end portion to terminate in a knife edge and the glass is sealed to the inside of said larger diameter end portion and not to the outside of the larger diameter end portion.

4,523,579

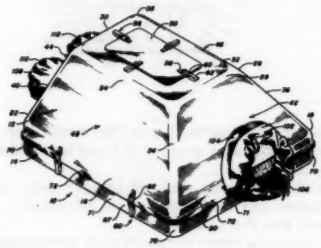
LIGHTWEIGHT BODY RESPIRATOR HAVING FLEXIBLE WALLS

Edward R. Barry, 46 Woodlawn Cir., Whitman, Mass. 02382

Filed Jun. 24, 1983, Ser. No. 507,806

Int. Cl.³ A61H *31/00*

U.S. Cl. 128—30.2 **18 Claims**



1. A lightweight body respirator having flexible walls, comprising:

an integral molded-thermoplastic cover member having an open, substantially rectangular, bottom portion defining vertices and a first preselected cross-sectional area, a vertically spaced substantially planar top portion defining vertices and a second preselected cross-sectional area substantially less than said first cross-sectional area, a vertically inclined support rib extending from each of the vertices of the bottom portion to the corresponding confronting vertice of the top portion, and an integral sloping flexible wall extending between adjacent support ribs and defining a bottom end;

an integral molded-thermoplastic base member having upstanding walls having top ends closed on themselves defining an open rectanguloid box having a preselected cross-sectional area selected to be substantially equal to said cross-sectional area of said bottom portion of said cover member and defining a conformal mattress receiving cavity;

one of said sloping flexible walls of said cover member having a passage therethrough formed along its bottom end;

a first longitudinally extending flange integrally formed on said one of said sloping flexible walls of said cover member peripherally around said passage of said cover member;

one of said upstanding walls of said base member that confronts said one of said sloping walls of said cover member having a passage therethrough formed along its top end;

a second longitudinally extending flange formed on said one of the upstanding walls of said base member peripherally around said passage of said base member;

said first and second longitudinally extending flanges being mateable such that said passages are cooperative to provide a neck receiving aperture;

a flexible, elongated, adjustable, air-tight collar slideably mounted in air-tight sealing engagement peripherally around said first and second longitudinally extending flanges; and

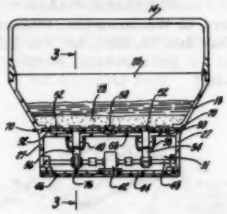
means for removably attaching said cover member and said base member in air-tight sealing engagement.

4,523,580

APPARATUS FOR TREATING HUMAN FEET

Aloysius K. Turenaud, 213 E. Washington, Ann Arbor, Mich. 48104

Filed May 3, 1982, Ser. No. 373,905
Int. Cl.³ A61H *1/02*
U.S. Cl. 128—52 **2 Claims**



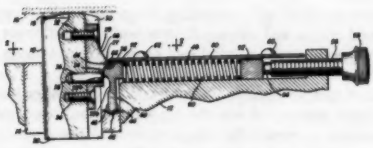
1. Apparatus for treating human feet comprising:
a container to hold a quantity of liquid into which said feet may be immersed;
a pair of horizontally disposed support plates within said container and each adapted to individually support a human foot thereon;
fin means on the upper surface of each of said support plates for massaging engagement with the bottom of said feet;
means mounting said support plates for reciprocating movement relative to each other within said liquid;
a quantity of particulates within said container and circulated by displacement of said liquid for colliding with said feet; and
drive means connected with said support plates for causing said plates to relatively reciprocate whereby said feet are relatively reciprocated in said container on said plates and said liquid and particulates are turbulized by the mutually reciprocal movement of said feet and said fins so that said fins massage the bottoms of said feet and the turbulized liquid and particulates massage and abrade the upper regions of said feet to provide total foot massage and total abrasive cleansing of said feet.

4,523,581

CHIROPRACTIC TABLE CUSHION DROP RELEASE MECHANISM

Carl R. Ekholm, Elgin, Ill., assignor to Standex International Corporation, Salem, N.H.

Filed Oct. 12, 1983, Ser. No. 541,364
Int. Cl.³ A61F *5/00*
U.S. Cl. 128—70 **8 Claims**



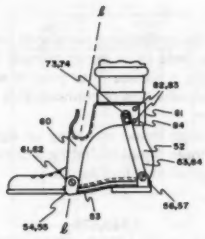
1. An adjustable support mechanism for a chiropractic table cushion comprising a support, a post mounted in said support for movement in a vertical axis, a cushion supported at least in part on the upper end of said post, a latch means mounted in said support for movement toward and away from said axis, said post having detent means cooperating with said latch means for holding said cushion in an elevated position, said detent means comprising a shoulder portion adapted to be seated on said latch means and an inwardly recessed portion above said shoulder portion, adjustable spring means for urging said latch means into engagement with said shoulder portion of said detent means so that a predetermined downward force on said cushion is required to release said detent means from said latch means and permit said cushion to drop from said elevated position, and stop means for limiting movement of said latch means toward said axis as said latch means moves into said recessed portion of said detent means, said stop means being effective to prevent said latch means from engaging said post as said latch means moves into said recessed portion after release of said detent means so that said cushion can freely drop to a desired lower position.

4,523,582

DEVICE FOR SUSPENDING THE HUMAN BODY IN AN INVERTED POSITION

S. Morgan Barber, 1417 La Habra, Lake San Marcos, Calif. 92069

Filed Jun. 7, 1982, Ser. No. 386,011
Int. Cl.³ A61F *5/00*
U.S. Cl. 128—71 **10 Claims**



1. A device for suspending a human body in an inverted position with respect to a horizontally extending supporting structure, comprising in combination:
(a) shoe means adapted for receiving and securing the foot of the human body, said shoe means including re-enforcing means in the heel-arch area of said shoe means, said shoe means with re-enforcing means being of sufficient strength for holding the human body in an inverted position;
(b) a rigid, inverted U-shaped member positioned above the top of said shoe means, said inverted U-shaped member spanning the width of said shoe means from the left to the right side, said inverted U-shaped member having left and right lower ends pivotally attached to said re-enforcing means for movement about a pivot axis extending from the left to the right sides of said shoe means; and
(c) a rigid, U-shaped hook means attached to the apex of and forming a part of said rigid, inverted U-shaped member, said U-shaped hook means and said inverted U-shaped member being pivotally movable over the top portion of said shoe means about said pivot axis, said U-shaped hook means being adapted for removable attachment to a horizontally extending supporting structure for suspending said shoe means and the human body in an inverted position.

4,523,583

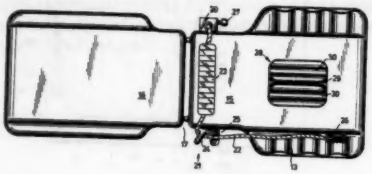
BACK EXERCISING DEVICE

James R. Noble, Mountain Rd., Henderson R.D. 1., Auckland, New Zealand

Filed Apr. 8, 1983, Ser. No. 485,465
Claims priority, application New Zealand, Apr. 30, 1982, 200465
Int. Cl.³ A61H *1/02*
U.S. Cl. 128—71 **3 Claims**

1. A lightweight portable back exercising device which is substantially planar on both sides, including a flat support that lies flat on the floor for supporting at least part of a patient's body substantially horizontally with the patient lying on his

stomach, the support including pressure portions at opposite sides of the support at one end thereof, and restraining means comprising a back strap that extends across the support with slack for restraining the midportion of the patient's body, so that a prone patient lying on his stomach can push on said



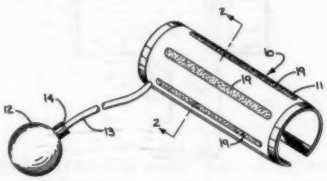
pressure portions to extend his upper lumbar segments whilst movement of the midportion of his body is restrained by said back strap, said pressure portions being flat and padded and elongated in the direction of the length of the patient's body and resting flat on the floor.

4,523,584

PENILE ERECTILE SYSTEM

Daniel Yachia, Ramat Efal, Israel, and Henry W. Lynch, Racine, Wis., assignors to Medical Engineering Corporation, Racine, Wis.

Filed Mar. 4, 1983, Ser. No. 472,155
Int. Cl.³ A61F *5/00*
U.S. Cl. 128—79 **11 Claims**



1. A penile erectile system for treating impotency in man, said system comprising:
(a) a sleeve of biocompatible material for implanting about a penile shaft beneath the penile skin, between the shaft and the skin, said sleeve having at least one pressurizable chamber;
(b) pressurizing means for pressurizing said chamber to make it rigid, said means comprising a fluid reservoir for pressurizing fluid and a pump;
(c) valve means for controlling the flow of fluid between the pressurizing means and the pressurizable chamber; and
(d) tubing connecting the pressurizing means to the pressurizable chamber.

4,523,585

ANATOMIC FRACTURE BRACE FOR THE KNEE

Steve R. Lamb, 2772 Sydney Way, Castro Valley, Calif. 94546, and Robert R. Moore, 4010 East Ave., Hayward, Calif. 94542

Filed Oct. 3, 1983, Ser. No. 538,120
Int. Cl.³ A61F *3/00*
U.S. Cl. 128—80 C **10 Claims**

1. A brace mechanism having a four-bar linkage for use in a paired arrangement on each side of a user's leg in an anatomic knee brace comprising:
a. a first extension link with an upward extension portion adapted and constructed to align with a user's leg on above the knee, and with a lower portion, having first and second spaced pivots;
b. a second extension link with a downward extension portion adapted and constructed to align with a user's leg below the knee and with an upper end portion having spaced third and fourth pivots, said distance between said third and fourth pivots being greater than said first and second pivots;
c. a third connecting link having a first end connected to said first pivot on said first link and a second end connected to said fourth pivot on said second link;
d. a fourth connecting link having a first end connected to said second pivot or said first link and a second end connected to said third pivot on said second link, said fourth link crossing said third link; wherein upon vertical alignment of said extension portions, said first pivot is located on said end portion of said first link proximate said exten-

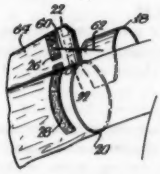
sion portion and said second pivot is displaced from said first pivot in a downward angled direction and, said third pivot is located on said end portion of said second link proximate said extension portion and said fourth pivot is displaced from said third pivot in an upward angled direction toward said second pivot, whereby said four-bar linkage is constructed and arranged to generate a polycentric motion with dual centers progressing from a common center point when said extension portions are aligned against a user's straight leg and diverging with asymmetric trajectories when said extensions portions are angled conforming to a user's bent leg, the asymmetric trajectories of the four-bar linkage approximately the asymmetric trajectories of the polycentric motion of user's knee.

4,523,586

PROTECTIVE COVER FOR A LIMB OR A CAST

Mark S. Couri, East Peoria, Ill., assignor to Sundstrand Corporation, Rockford, Ill.

Filed Dec. 12, 1983, Ser. No. 560,855
Int. Cl.³ A61F *13/00*
U.S. Cl. 128—82 **9 Claims**



1. A protective cover for a limb, cast, or the like comprising:
(a) a bag of flexible material substantially impervious to an

element to be protected against, said bag having an opening through which the limb or cast to be protected may be inserted into the bag;

(b) the interior of said bag, adjacent said opening, being provided with a series of mating fasteners for fastening the internal sides of said bag together to thereby decrease the effective size of said opening to cause the size and shape of the opening to conform snugly to the size and shape of a limb or cast at its point of entry into the bag;

(c) the exterior of said bag opposite said internal sides, when said internal sides are fastened together defining a flap;

(d) a first flap fastener carried by said flap on the exterior of said bag adjacent said opening; and

(e) a second flap fasteners engageable with said first flap fastener carried by said bag on its exterior adjacent said opening and remote from said flap;

(f) whereby said opening may be substantially sealed about a limb or a cast by engaging said mating fasteners and folding the resulting said flap about the bag to engage said first and second flap fasteners.

4,523,587

RETENTION DEVICE FOR CENTERING AN ENDOPROSTHESIS SHANK IN A BONE

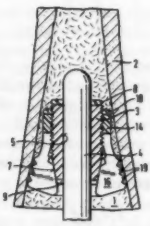
Otto Frey, Winterthur, Switzerland, assignor to Sulzer Brothers Limited, Winterthur, Switzerland

Filed Jan. 24, 1983, Ser. No. 460,366

Claims priority, application Switzerland, Feb. 23, 1982, 1093/82

Int. Cl.³ A61F 5/04

U.S. Cl. 128—92 C **16 Claims**



1. A retention device for centering an endoprosthesis shank in a bone, said retention device comprising

a guide piece having a cavity extending therethrough for slidably receiving the shank in slide fit relation, and

an expandable anchoring element receiving said guide piece therein in wedge-like relationship.

4,523,588

PROTECTIVE PILLOW ASSEMBLY

Thomas P. Dolsky, Topeka, Kans., assignor to Life Products, Inc., Topeka, Kans.

Filed Apr. 27, 1982, Ser. No. 372,124

Int. Cl.³ A62B 7/00

U.S. Cl. 128—201.25 **10 Claims**

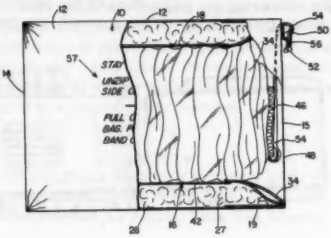
1. Apparatus for protecting a person caught in a fire emergency from smoke inhalation, comprising:

a. a first sleeve closed at one end and formed of air-pervious fabric;

b. a transparent sleeve formed of a flexible air-impervious material having one end connected completely about its periphery to the other end of said first sleeve, said transparent sleeve having means at the opposite end thereof adapted to engage the head and surround the breathing passages of said person when in said fire emergency;

c. pillow batting; and

d. means for supporting said pillow batting within said first sleeve in such a manner that said pillow batting will serve



as a smoke filter when said transparent sleeve is engaged with said head of said person in said fire emergency.

4,523,589

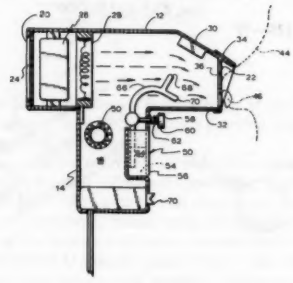
METHOD AND APPARATUS FOR TREATING AILMENTS

Robert S. Krauser, 444 Taconic Rd., Greenwich, Conn. 06830

Continuation-in-part of Ser. No. 509,172, Jun. 29, 1983, abandoned. This application Dec. 22, 1983, Ser. No. 564,306

Int. Cl.³ A61M 16/00

U.S. Cl. 128—203.27 **8 Claims**



1. A method for alleviating symptoms of a viral and/or bacterial infection comprising the steps of:

warming air to a temperature above 105° F. so it is relatively dry,

directing a stream of the warmed and relatively dry air to the nasal passages of a person to be treated, and

spraying a measured quantity of a misted microbicidal agent for inhalation into the nasal passages thereby to coat the membranes within the warmed nasal passages with said microbicidal agent.

4,523,590

METHOD AND DEVICE FOR REVERSIBLE STERILIZATION IN MAMMALS

Wilfred Roth, 185 S. Cove Rd., Burlington, Vt. 05401, and C. Irving Meeker, 196 Winn Rd., Falmouth, Me. 04105

Filed Oct. 25, 1982, Ser. No. 436,292

Int. Cl.³ A61B 17/12

U.S. Cl. 128—325 **13 Claims**

1. A device for effecting reversible sterilization in female mammals by means of occlusion of the fallopian tubes which comprises:

(a) blocking means for insertion into a fallopian tube, said blocking means comprising at least one notched or grooved portion between two end portions, said at least one notched or grooved portion being smaller in diameter

than the diameter of said end portions, which end portions, in turn, are smaller in diameter than the inside diameter of said fallopian tube;

(b) flexible retaining means comprising a body portion having at least two apertures, at least one slit portion, and opening means for opening one of said at least two apertures and said slit portion for reception of the mesosalpinx and the portion of said fallopian tube which surrounds said blocking means; and

(c) locking means configured and dimensioned to fit into a second aperture of said flexible retaining means and apply force to close said first aperture of said flexible retaining means around said notched or grooved portion of said blocking means so as to hold and maintain said blocking means within said fallopian tube to provide occlusion of said fallopian tube over time;

said blocking means, flexible retaining means, and locking means designed for easy installation and removal without damaging said mesosalpinx or said fallopian tube.

4,523,591

POLYMERS FOR INJECTION MOLDING OF ABSORBABLE SURGICAL DEVICES

Donald S. Kaplan, 7 White Oak La., Weston, Conn. 06883, and Ross R. Muth, 97 Clearview Dr., R.D. 2, Conn. 06804

Filed Oct. 22, 1982, Ser. No. 436,056
Int. Cl.³ A61L *15/04, 17/00*
U.S. Cl. 128—334 R **24 Claims**

1. A method for making an absorbable surgical fastener of a copolymer made from 70–85% m lactide and 15–30% glycolide, said fastener retaining its strength in vivo for a sufficient amount of time and having a crystallinity of not more than about 5%, said method comprising the steps:

(a) copolymerizing lactide and glycolide;

(b) purifying the resulting crude product by removing the unreacted monomers sufficiently to raise the glass transition temperature to at least 56° C. when measured by differential scanning calorimetry at 20° C./min and maintaining the inherent viscosity at at least 1.3 when measured in chloroform at 30° C. at a concentration of 0.25 g/dl;

(c) drying the copolymer;

(d) forming the fastener from the purified dry copolymer; and

(e) maintaining the crystallinity of the fastener at not more than about 5%.

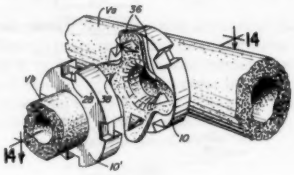
14. An absorbable surgical fastener that retains in vivo strength for a sufficient period of time comprising a copolymer made from 70–85% m lactide and 15–30% m glycolide, said fastener having a glass transition temperature of at least 54° C. when measured by differential scanning calorimetry at 20° C./min, an inherent viscosity of at least 0.9 when measured in chloroform at 30° C. at a concentration of 0.25 g/dl, and a crystallinity of not more than 5%.

4,523,592

ANASTOMOTIC COUPLING MEANS CAPABLE OF END-TO-END AND END-TO-SIDE ANASTOMOSIS

Rollin K. Daniel, Birmingham, Ala., assignor to Rollin K. Daniel P.S.C., Louisville, Ky.

Filed Apr. 25, 1983, Ser. No. 488,182
Int. Cl.³ A61B *17/04*
U.S. Cl. 128—334 C **7 Claims**



1. A two piece anastomotic coupling device for either end-to-end or end-to-side anastomosis of tubular tissue vessels, comprising:

a. a pair of disc-like coupling members, each having an outer radial face, a pair of oppositely disposed planar axial faces, and an axial bore through said axial faces communicating with said axial faces, and dimensioned to receive a vessel therein;

b. a plurality of integral coupling projections extending from a first axial face of each said member, each of said projections comprising a shoulder and an anchoring means for everted purchase thereon of a vessel passing through said bore;

c. receptor means for each coupling projection located on the other said member, said receptor means comprising a plurality of recesses in the outer radial face and the adjacent portion of at least said first axial face of said member, said recesses projecting radially inwardly from said outer radial face, the number of said recesses being at least equal to the number of coupling projections on the other said member, each said recess carrying a shoulder on at least one surface thereof which shoulder is dimensioned to receive the shoulder of said projection in coupling relationship;

whereby placement of said members in an aligned first axial face-to-first axial face relationship results in coupling of each said projection with a receptor means, and maintains the everted vessel parts in contact between said first axial faces.

4,523,593

CONSTANT A-A INTERVAL CONTROL FOR DVI AND DDD CARDIAC PACEMAKERS

John C. Rueter, Shoreview, Minn., assignor to Medtronic, Inc., Minneapolis, Minn.

Filed Jun. 15, 1983, Ser. No. 504,709
Int. Cl.³ A61N *1/36*
U.S. Cl. 128—419 PG **2 Claims**

1. An implantable cardiac pacer operable in a DVI or DDD mode of pacing comprising:

means for sensing an atrial pacing pulse or a P-wave pulse sensed from a patient;

means for providing a predetermined atrial-ventricular timing interval;

means for sensing the occurrence of an R-wave pulse from the patient;

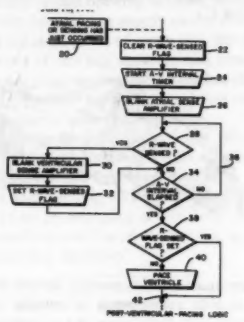
means for pacing the ventricular chamber of the patient in the absence of a sensed R-wave during the atrial-ventricular time interval;

means for providing a predetermined ventricular-atrial timing interval immediately upon the termination of the atrial-ventricular timing interval;

means for issuing an atrial pacing pulse at the end of the ventricular-atrial timing interval;

means for determining if an R-wave was sensed during the atrial-ventricular timing interval; and

means for inhibiting the generation of the ventricular pacing pulse until the end of the atrial-ventricular timing interval



in the event that said R-wave was sensed during the atrial-ventricular interval, and for allowing said means for providing a predetermined atrial-ventricular timing interval to provide the entire atrial-ventricular timing interval regardless of whether or not an R-wave was sensed during said atrial-ventricular timing interval.

4,523,594

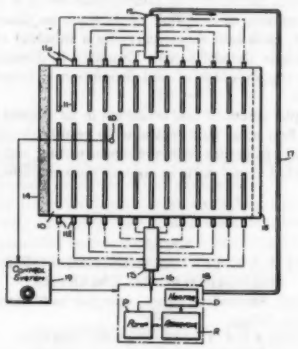
STRETCHABLE TEXTILE HEAT-EXCHANGE JACKET

Lawrence Kuznetz, 66 Joyce Rd., Plainview, N.Y.

Filed Feb. 12, 1982, Ser. No. 348,223

Int. Cl.³ A61F *7/00*

U.S. Cl. 128—402 **7 Claims**



1. A heat-exchange system including stretchable textile heat-exchange jacket which is adapted to be wrapped about a body member such as a knee and which functions therapeutically to heat or cool the member embraced thereby, the system comprising:

A. a stretchable fabric sheet having two sides, said fabric sheet being fabricated of elastic fibers and being provided with releasable means to hold the sheet in place to form a jacket when it is wrapped about a body member, whereby when the body member is bent the sheet assumes the same form;

B. a parallel array of flexible pipes secured to the stretchable sheet whereby the sheet may then be stretched in a direction normal to the direction of the pipes, said pipes being in heat exchange relation to the body member and following the form assumed by the sheet, each pipe having an inlet end and an outlet end extending beyond said sheet; and

C. means to conduct a fluid through the pipes in the array at a temperature level at which heat transfer takes place between the jacket and the member to effect the desired therapeutic action, said means including a source of pressurized fluid, a mainfold distributor couple to the inlet ends of said pipes to supply fluid thereto in parallel paths, and a manifold collector coupled to the outlet ends of the pipes to collect the fluid therefrom, said distributor and said collector being external to said fabric sheet; said jacket being included in a closed loop system having said pressurized fluid source whose output is coupled to said distributor, the collector being coupled to the input of the source whereby the fluid recirculates in parallel paths through the pipes.

4,523,595

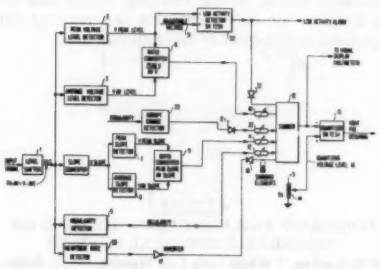
METHOD AND APPARATUS FOR AUTOMATIC DETECTION AND TREATMENT OF VENTRICULAR FIBRILLATION

J. Scott Zibell, 40 Brittany Ct., Charlotte, N.C. 28226

Filed Nov. 25, 1981, Ser. No. 325,061

Int. Cl.³ A61N *1/36*

U.S. Cl. 128—419 D **13 Claims**



1. Ventricular fibrillation detector comprising, electrode means for application to a patient's chest,

means coupled to said electrodes for producing an electrocardioggram waveform of the patient's heart,

electrical circuit means forming a library of features of known electrocardiogram waveform characteristics of various heart conditions,

electrical circuit means for comparing the electrocardiogram waveform of said patient against said library of features of known known electrocardiogram waveform characteristic of various heart conditions, and

indicator means for indicating the absence of all of said stored characteristics in said electrocardiogram of the patient's heart as ventricular fibrillation.

4,523,596

BLOOD VESSEL PROJECTION IMAGING SYSTEM USING NUCLEAR MAGNETIC RESONANCE

Albert Macovski, 2505 Alpine Rd., Menlo Park, Calif. 94025

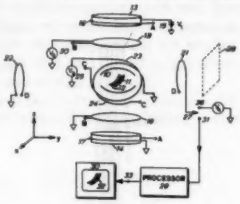
Continuation of Ser. No. 332,925, Dec. 21, 1984,. This application Sep. 10, 1984, Ser. No. 648,469

Int. Cl.³ A61B *5/05*

U.S. Cl. 128—653 **17 Claims**

1. In a method for imaging moving material in a volume the steps of addressing the magnetic spins in the volume so that static material will produce no net received signal and moving material will produce a signal including

exciting the magnetic spins in the volume during a first time interval when the material is moving at a first velocity;
exciting the magnetic spins in the volume during a second time interval when the material is moving at a second velocity different than that of the first velocity; and



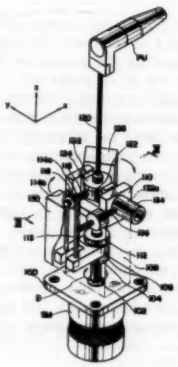
subtracting the received signals derived from the first and second excitations, and
processing the resultant received signals to form a two-dimensional projection image of the moving material in the volume.

4,523,597

APPARATUS AND METHOD FOR MEASURING THE INTRAOCULAR PRESSURE OF AN EYEBALL AND AUXILIARY DEVICE FOR USING THEREWITH

Seiji Sawa, Sakai, and Nobuyuki Kita, Osaka, both of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Dec. 29, 1983, Ser. No. 566,485
Claims priority, application Japan, Dec. 29, 1982, 57-228557; Apr. 8, 1983, 58-62778; Nov. 21, 1983, 58-219767; Nov. 22, 1983, 58-220066; Dec. 22, 1983, 58-243575
Int. Cl.³ A61B *3/16*
U.S. Cl. 128—652 **39 Claims**



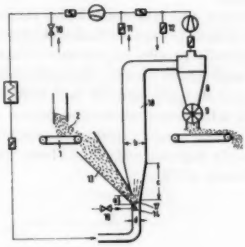
1. An apparatus for measuring the intraocular pressure of an eyeball into which fluorescent liquid has been instilled, comprising
an applanation pickup having a flat applanation surface;
means for pressing the eyeball with said applanation pickup in order to flatten the front surface of the eyeball by said applanation surface, said pressing means being capable of varying the pressure against the eyeball;
means for illuminating the flattened surface of the eyeball in order to excite a fluorescent ring formed around the flattened surface;
means for forming an image of said fluorescent ring;
means for receiving said image of said fluorescent ring to produce an image signal corresponding to the shape and size of said image, said receiving means including an area image sensor capable of receiving a two-dimensional image to convert it to electrical signals;
means for detecting the pressure against the eyeball by said pressing means to produce a pressure detecting signal representative of said detected pressure;
means for measuring the area surrounded by said image, based on the electrical signals from said image sensor, to produce an area signal representative of said measured area;
means for calculating the intraocular pressure of the eyeball in accordance with said pressure detecting signal and said area signal to produce an intraocular pressure signal representative of said calculated intraocular pressure; and
means for indicating the intraocular pressure in accordance with said intraocular pressure signal.

4,523,598

PROCESS FOR IMPROVING THE FILLING CAPACITY OF TOBACCO MATERIAL

Arno Weiss, Delingsdorf, and Jörn Ulrich, Bönningstedt, both of Fed. Rep. of Germany, assignors to B.A.T. Cigarettenfabriken GmbH, Fed. Rep. of Germany

Filed Sep. 1, 1982, Ser. No. 413,753
Claims priority, application Fed. Rep. of Germany, Sep. 5, 1981, 3135283; Dec. 3, 1981, 3147846
Int. Cl.³ A24B *3/18*
U.S. Cl. 131—291 **24 Claims**



1. A process for improving the filling capacity of tobacco material by expanding the moist tobacco material in an acceleration zone comprising: introducing said moist tobacco material into a gaseous medium; accelerating said moist tobacco material to a velocity of at least 20 meters per second by means of said gaseous medium, said acceleration reducing the ambient pressure causing said moist tobacco material to expand while in the acceleration zone; decelerating said tobacco material; and drying said tobacco material.

4,523,599

ATTACHABLE TOOTHBRUSH

Georges Collet, P.O. Box 19.000, Caracas, Venezuela

Filed Jan. 31, 1983, Ser. No. 462,619
Int. Cl.³ A45D *44/18*
U.S. Cl. 132—84 D **6 Claims**

1. A toothbrush and holder comprising:
(a) said toothbrush including a rigid elongate member and said holder including an attachment member, both said elongate member and said attachment member cooperatively structured for releasable attachment to one another,
(b) said elongate member including a handle portion and a brush portion interconnected to one another and a first and a second side substantially extending along the length of both said handle and brush portions,
(c) a metallic insert mounted within said handle portion and including a front surface disposed in exposed, accessible relation to said first side of said handle portion,

(d) said brush portion comprising bristle means extending outwardly from said first side of said brush portion a first distance and being sized for the mouth,

(e) said attachment member having a first and a second attachment surface being spaced apart a second distance, said first attachment surface including mounting means thereon disposed for engagement with a fixed surface,

(f) said second attachment surface disposed substantially parallel to said first attachment surface and including a plate affixed thereto, said plate structured and disposed to

magnetically attract and mate with said front surface of said insert,

(g) said plate and said insert being cooperatively disposed, when mated, to support said elongate member in a plane substantially parallel to said second attachment surface,

(h) said attachment member being structured cooperatively with said elongate member such that said second distance of said attachment member is greater than said first distance of said brush portion and said bristle means is confrontingly disposed and spaced from the plane of said first attachment surface.

4,523,600

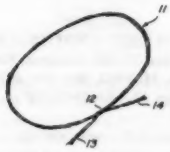
DENTAL FLOSSING PRODUCT

Marion Donovan, 850 Park Ave., New York, N.Y. 10021

Continuation of Ser. No. 153,907, May 28, 1980, abandoned, which is a continuation-in-part of Ser. No. 92,969, Nov. 9, 1979, abandoned. This application Jul. 1, 1983, Ser. No. 510,271

Int. Cl.³ A61C *15/00*

U.S. Cl. 132—89 **9 Claims**



1. A floss type plaque removal implement comprising a continuous loop of multifiliment thread having at least one joint region wherein overlapping portions of the thread are connected together securely, and at least one tail which is formed as an integral extension of said multifiliment thread from said joint region, the loop being so sized that it may be trained about fingers on opposite hands of the user and extend therebetween in a taut state through interdental spaces.

4,523,601

DOUBLE ACTION UMBRELLA

Clyde C. Grady, Lonoke County, Ark., and Clyde C. Grady, II, Baytown, Tex., assignors to Christianson Manufacturing Corporation, Baytown, Tex.

Filed May 8, 1983, Ser. No. 475,770

Int. Cl.³ A45B *25/14, 25/16*

U.S. Cl. 135—22 **2 Claims**

1. An umbrella having a canopy and a frame of interconnected ribs and a means for the automatic opening and closing of the aforesaid ribs and canopy comprising:

a hollow outer cylinder;

a hollow inner cylinder located concentrically within the aforesaid outer cylinder wherein the inner cylinder slidably moves within the aforesaid hollow outer cylinder;

a sleeve which slidably moves on the exterior of the aforesaid hollow outer cylinder;

a hollow inner tube located concentrically within the aforesaid hollow inner cylinder;

a handle attached to the aforesaid hollow outer cylinder and hollow inner tube wherein said handle contains an ampule of compressed gas and said ampule is connected by passageways to the aforesaid hollow inner tube;

an extension spring attached at one end to the aforesaid inner cylinder and at its alternate end attached to the aforesaid outer cylinder;

a latching mechanism preventing the movement of the inner cylinder with respect to the outer cylinder wherein said mechanism is released by the movement of the aforesaid sleeve;

a shaft which fits snugly within the aforesaid inner tube;

a valve disposed within said handle which either stops or allows flow of gas from the aforesaid ampule through passageways to the aforesaid inner tube;

a vent port communicating with said passageways which permits communication of said passageways with the atmosphere upon the movement of the aforesaid sleeve;

movement in one direction of said sleeve simultaneously releasing said latching mechanism and opening said vent port to atmosphere, movement of said sleeve in a direction reverse of the aforesaid direction allowing said latching mechansim to engage while sealing said vent so that fluid pressure from said ampule may impinge against said shaft.

4,523,602

PRESSURE CONTROLLER

David E. Snyder, Longview, Tex., assignor to Axelson, Inc., Longview, Tex.

Filed Jul. 22, 1983, Ser. No. 516,360

Int. Cl.³ F16K *17/00*

U.S. Cl. 137—467 **21 Claims**

1. A pressure controller for controlling control pressure in response to a change in a service pressure, which comprises:

a valve body including a control inlet and a bleed outlet with a passage intercommunicating said control inlet and said bleed outlet;

a first valve seat within said passage between said control inlet and said bleed outlet;

a first valve member reciprocatingly mounted in said pas-

sage for movement between a closed position in engagement with said first valve seat to block communication between said control inlet and said bleed outlet and an open position out of engagement with said first valve seat;

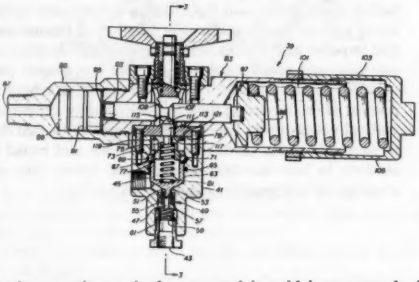
means for releasably latching said valve member in said closed position, said latching means including:

(a) a detent recess formed in said valve body;

(b) a detent movably carried with said first valve member;

(c) and a trigger reciprocatingly mounted in said valve body, said trigger including means for urging said detent into engagement with said detent recess when said valve member is in said closed position;

an instrument body mounted adjacent said valve body, said instrument control body including a sense inlet;



a piston reciprocatingly mounted in said instrument body and having a face adapted to be exposed to service pressure received at said sense inlet;

an elongated operator mounted in said instrument body and longitudinally movable with said piston, said operator including a cam portion;

means for urging said operator in the direction opposite the force due to said service pressure acting on said piston;

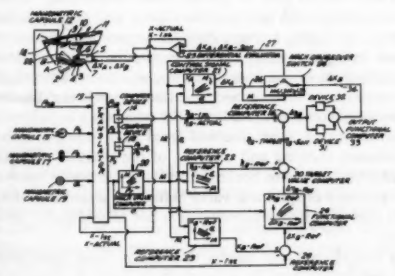
and a cam follower engaging said cam portion and operably connected to said trigger for releasing said latching means to allow said first valve member to move to said open position.

4,523,603

AIR INTAKE CONTROL FOR AN ADJUSTABLE AIR INLET, PARTICULARLY TWO-DIMENSIONAL OBLIQUE SHOCK DIFFUSER FOR GAS TURBINE JET ENGINES FOR THE PROPULSION OF HIGH PERFORMANCE AIRCRAFT

Jürgen Peikert, Johann Houis Str. 34, 8 München 70, Fed. Rep. of Germany

Filed Dec. 10, 1980, Ser. No. 222,267
Int. Cl.[3] F41C 7/042
U.S. Cl. 137—15.2 **6 Claims**



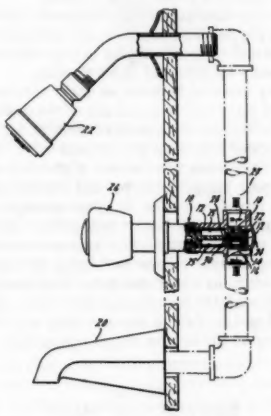
1. An air intake control for a variable air inlet, such as for a two-dimensional oblique shock diffuser for gas turbine engines for the propulsion of high performance aircraft, comprising an axially extending air intake duct having an inlet end and comprising upper ramps located at the inlet end, an air inlet bottom spaced below said upper ramps and spaced in the axial direction of said air intake duct from the inlet end, a movable air scoop lip pivotally connected to said air inlet bottom about an axis extending transversely of the axial direction of said air intake duct and extending from said axis located at the end of said air inlet bottom closer to the inlet end toward said inlet end, drive means for moving said air scoop lip in a lower subsonic/transconic, wider-angular operating range (A) between a lower set point (a) with a maximum set angle of δ_A-max more remote from said upper ramps and a mean set point (b) closer to said upper ramps, and a smaller angular range (B) between said mean set point (b) and an upper mean set point (c) closer to said upper ramps than said mean set point (b) and said smaller angular range (B) having a maximum set angle of δ_B-max, first control means for producing a first electrical control demand signal for driving said drive means and moving said air scoop lip in the wider-angular operating range (A) in response to flight machnumber (M) and the the aircraft angle of attack (α) according to the functional control law $\delta_A = f(1/M)$, α, and second control means for producing a second electrical control demand signal for driving said drive means and moving said air scoop lip in the upper smaller angular range (B) in response to a variable demand pressure ratio between the static pressure above said upper ramps and the free stream total pressure said variable demand pressure ratio being a function of the actual air scoop lip position.

4,523,604

DIVERTER VALVE

Joe D. Hutto, Indianapolis, Ind., assignor to Masco Corporation of Indiana, Taylor, Mich.

Filed Mar. 14, 1983, Ser. No. 474,804
Int. Cl.[3] F16K 11/02
U.S. Cl. 137—102 **13 Claims**



1. A diverter valve characterized by:

a housing having a cavity with a first outlet, a second outlet, and an inlet;

a valve element movably mounted in said cavity between a first position and second position;

said valve element being an elastomeric sleeve rotatably mounted about a valve seat;

said valve seat being operably rotatable within said cavity;

said outlets being through the side wall of said cavity and said inlet being at an end thereof;

said valve member when in said first position being adjacent said first outlet and being pressure responsive to fluid

pressure in said cavity such that over a predetermined pressure in said cavity, said sleeve seals said first outlet and fluid is directed through said second outlet from said inlet; and

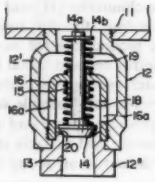
said first outlet being lower than said second outlet such that when fluid pressure in said cavity is below a predetermined amount, said valve element breaks its seal with said first outlet and allows fluid to drain from said second outlet to said first outlet.

4,523,605

FREEZE PREVENTING VALVE

Ichizo Ohkata, Yokohama, Japan, assignor to Kato Hatsujo Kaisha Ltd., Yokohama, Japan

Filed Apr. 25, 1984, Ser. No. 603,769
Claims priority, application Japan, Dec. 31, 1983, 58-251423
Int. Cl.³ E03B 7/12
U.S. Cl. 137—62 **4 Claims**



1. A freeze preventing valve comprising:

a valve cage body longitudinally provided with a cylindrical guide at the upper part thereof in a hollow valve housing connected to a steam feed pipe,

a valve element having a shaft disposed through the guide of said valve body to be able to open an exhaust port opened at the lower end of the housing and to be elevationally guided within the guide of the housing,

a spring of shape memory alloy interposed within the valve cage body between an upper interior surface of said valve body and said valve element for urging said valve element downwardly to close said valve element,

a bias spring mounted between an upper exterior surface of said valve body and an upper end of the shaft protruding through the guide of said valve element for urging said valve element upwardly to open said valve element,

said valve body being formed with a plurality of holes the exhaust port being closed by said valve element when steam is introduced from the pipe through the hollow valve housing into said valve cage body to heat and elongate said spring of shape memory alloy and to contact said bias spring, and the exhaust port being open by said valve element when the condensed water from the pipe is introduced through the housing into said valve body to contract said spring of shape memory alloy and elongate said bias spring by the tension of said bias spring.

4,523,606

DISTRIBUTION VALVE

Charles M. Gould, Glendale, and Andy F. Blake, Phoenix, both of Ariz., assignors to Shasta Industries, Inc., Phoenix, Ariz.

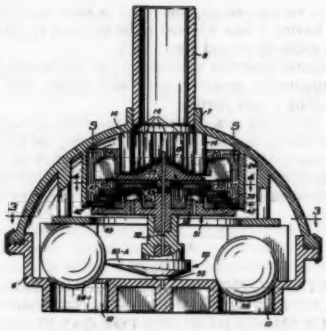
Filed Apr. 22, 1983, Ser. No. 487,758
Int. Cl.³ F16K 31/16
U.S. Cl. 137—119 **8 Claims**

1. A fluid distribution valve having an inlet port for receiving fluid under pressure and also having a plurality of outlet ports through which the received fluid is sequentially expelled under pressure, said fluid distribution valve comprising in combination:

(a) a housing having said inlet port and said plurality of outlet ports therein, said housing bounding an interior chamber, said inlet port being located at the top of said housing and directing flow of said fluid downward into said chamber;

(b) a rotary impeller disposed beneath said inlet port in said chamber, and having a rotary star-shaped plate and a plurality of vertical vanes each supported along an edge of a respective broad extension of said star-shaped plate for rotating in response to flow of fluid into said chamber through said inlet port, said impeller having a first gear attached rigidly thereto, said star-shaped plate having an upper surface;

(c) a plurality of stationary, substantially vertical baffles disposed in said chamber between said inlet port and said impeller, each of said baffles extending nearly to the upper surface of said star-shaped plate, each of said vertical baffles constraining said fluid to flow against said vertical vanes and the upper surfaces of said broad extensions of said impeller as it rotates, said stationary baffles cooperating with said broad extensions of said star-shaped plate adjacent to said vertical vanes to constrain a substantial portion of the incoming fluid to flow directly against said vertical vanes of said impeller and then to allow that fluid to pass unimpeded through gaps between said broad extensions in said star-shaped plate and lower into said chamber as said impeller continues to rotate;



(d) a planetary gear attached in stationary relationship to said housing in the interior thereof;

(e) gear reduction means having a second gear for meshing with said first gear and a third gear responsive to rotation of said second gear in geared-down relationship thereto for meshing with said planetary gear, said gear reduction means including a rotary base for supporting said second and third gears, said rotary base rotating in geared-down relationship to said impeller in response to rotation of said impeller, said first, second, and third gears being disposed immediately beneath said impeller whereby a high level of turbulence of fluid received from said impeller effects continual flushing and cleaning of the gears in said gear reduction means to prevent build-up of deposits thereon;

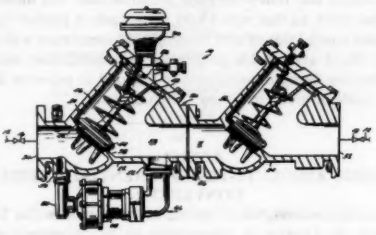
(f) a plurality of spherical valve balls each seated in a circular seating surface of a respective one of said outlet ports; and

(g) a foot-shaped cam rigidly attached in fixed relationship to said rotary base for rotation in response to rotation of said impeller and in geared-down relationship to said impeller, for sequentially unseating respective ones of said valve balls to allow water to be ejected from said chamber through unseated outlet ports.

4,523,607
BACKFLOW PREVENTER APPARATUS

Joseph L. Daghe, Decatur; Robert E. Sands, Shelbyville, and Dennis W. Humes, Decatur, all of Ill., assignors to Mueller Co., Decatur, Ill.

Division of Ser. No. 383,305, May 28, 1982, Pat. No. 4,489,746.
This application Aug. 21, 1984, Ser. No. 642,937
Int. Cl.[3] F16K *15/06*
U.S. Cl. 137—218 4 Claims



1. A poppet-type check valve for use in a backflow preventer assembly positioned between a supply pipe and a service pipe, said check valve comprising:

a body member having a passage therethrough for the flow of liquid;

a valve seat ring in said passage and lying in a plane at an acute angle to the longitudinal axis of said passage;

a valve element cooperating with said valve seat ring, said valve element being spring urged to a closed position on said valve seat ring and pressure urged to an open position, said valve seat ring having an annular interior wall; and

a guide member for said valve element, said guide member including a disc fixedly attached to said valve element and having a diameter substantially equal the diameter of the wall of said valve seat ring whereby it can be received in the same, said disc having a plurality of guide fingers extending from its periphery, each of said fingers having an outer circumferential surface cooperating with the side wall of said seat ring, said fingers being configured to provide a minimum loss in pressure through said check valve when said check valve is open and liquid is flowing therethrough, each of said fingers being tapered in an upstream direction, both circumferentially and radially whereby when said valve begins to open, the area of opening progressively increases for each unit of movement of said disc and the amount of restriction to flow upstream of the ring decreases, said fingers each having a rounded configuration on an interior surface from edges of said circumferential surface whereby turbulence in reduced.

4,523,608
ROTARY BALL VALVE ASSEMBLY

Ivan O. Miller, Fullerton, Calif., assignor to Shafco Industries Inc., Buena Park, Calif.

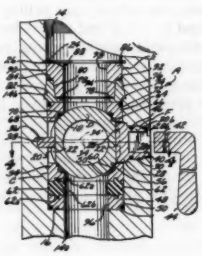
Filed Apr. 15, 1982, Ser. No. 368,753
Int. Cl.[3] F16K *5/20*
U.S. Cl. 137—315 2 Claims

1. A high pressure valve of the type that includes an elongate valve body that has first and second passages extending longitudinally therethrough from an upper first end and a lower second end that is their junction define a circular body shoulder, a lower valve seat assembly in said first passage that rests on said body shoulder and is partially defined by a resilient member; a ball member in said valve body, said ball member having a diametrical passage therein that may be aligned with said first and second passages when said ball member is rotated from a first to a second position, said ball member when in said first position being longitudinally movable relative to said valve body, means for rotating said valve member between said first and second positions, said high pressure valve being characterized by including an upper valve seat assembly in said first passage that distributes an upwardly directed longitudinal force exerted by high pressure fluid in said second passage on said ball member both longitudinally and tranversely to said valve body, when said ball member is in said first position, said upper valve seat assembly including:

a. a rigid ring slidably mounted in said first passage, said rigid ring having a concave surface in abutting contact with said ball member, with the internal diameter of said ring greater than the diameter of said second passage, said concave surface having a first circular recess therein, and said rigid ring including a cylindrical side surface and a top surface;

b. a first resilient ring mounted in said first recess and projecting therefrom that slidably and sealingly engages said ball member;

c. a rigid segmented ring in said first passage that rests on said top surface of said rigid ring, said segmented ring including an upwardly and inwardly tapered external side surface and an upwardly and outwardly tapered internal side, said external surface in abutting contact with a circular upwardly and inwardly tapered recess defined in said valve body adjacent said first passage with said segmented ring when it attempts to move longitudinally toward said first passage by a longitudinal force exerted thereon transferring a position of said longitudinal force transversely to said valve body said segmented ring defined by a plurality of rigid segments that have lower portions and a plurality of flat bottomed flanges that extend inwardly towards one another from said lower portions, with said flat bottomed flanges resting on said top surface of said rigid ring;



d. a rigid locking ring that includes an upper cylindrical portion slidably mounted in said first passage and a second portion that extends downwardly therefrom, said second portion having an external upwardly and outwardly tapered side surface that is in abutting contact with said internal side surface of said segmented ring, said cylindrical portion including a top surface; and

e. a snap ring that removably engages a recess in said valve body in said first passage, said snap ring in abutting contact with said locking ring to prevent movement of said locking ring towards said first passage, with an upward force on said ball member when the latter is in said first position being transferred through said rigid ring to said segmented ring, with said segmented ring as said tapered external side surface attempts to move upwardly relative to said tapered recess transforming a portion of said upward force to a transverse outwardly directed force on said valve body, and said internal tapered side surface of said segmented ring as it attempts to move upwardly relative to said upwardly and outwardly tapered surface of said second portion of said locking ring transforming a portion of said upward longitudinal force to a transverse inwardly directed force on said second portion.

4,523,609

VOLUME FLOW OR PRESSURE REGULATING DEVICE

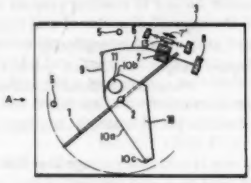
Franz Weck, Wuerselen, Fed. Rep. of Germany, assignor to H. Krantz GmbH & Co., Aachen, Fed. Rep. of Germany

Filed Jul. 12, 1983, Ser. No. 513,039

Claims priority, application Fed. Rep. of Germany, Jul. 26, 1982, 3227882

Int. Cl.³ G05D *7/01;* **F24F** *13/10*

U.S. Cl. 137—499 **13 Claims**



1 A volume flow or pressure regulating device for installation in a flow channel, comprising a shaft extending through said channel, bearing means rotatably supporting said shaft, control flap means rigidly secured to said shaft for rotation with the shaft in said channel, cam means rigidly secured to said shaft, said cam means having a cam surface, a tension or pulling cable, bending spring means including a leaf spring having one end secured to a fixed point having a variable position, said pulling cable being secured with one end thereof to a point on said cam surface, said pulling cable being secured with its other end to a free end of said bending spring means, said pulling cable, said bending spring means, and said cam surface being located relative to each other so that a variable portion of the length of the cable rests against and along the cam surface in response to the angular position of said flap means for maintaining a controlled flow condition and adjusting means (7) forming said fixed point shiftably connected to said leaf spring and including means for shifting said fixed point along said leaf spring for adjusting an effective length of said bending leaf spring for providing a two branch torque moment characteristic.

4,523,610

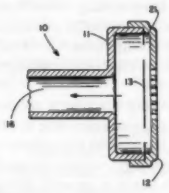
CHECK VALVE

Mario M. V. Orrico, Chicago, Ill., assignor to Honeywell Inc., Minneapolis, Minn.

Continuation of Ser. No. 380,967, May 24, 1982, abandoned. This application Aug. 22, 1984, Ser. No. 643,098

Int. Cl.³ F16K *15/14*

U.S. Cl. 137—512.15 **10 Claims**



1. A check valve comprising:

a housing having first and second sides, said first side having an opening and said second side having a substantially flat surface containing an inner portion and an outer portion with opening means within said inner portion; and,

a thin membrane, comprised of a carbon filled polycarbonate film, within said housing and having an inner portion and an outer portion with holes within said outer portion of said thin membrane and cooperating with said opening means of said second side of said housing such that, for air flows from said first side of said housing to said second side, said membrane will be pushed against said second side wherein said inner portion of said membrane will seal said opening means of said second side to check flow from said first side of said housing to said second side and, for air flows from said second side of said housing to said first side, said membrane will be pushed away from said second side to allow air flow through said opening means of said second side and said holes of said membrane and then through said opening of said first side, said housing supporting said thin membrane such that said thin membrane has slack so that when said membrane is pushed against said second side of said housing, said membrane will move without appreciable stretching, said membrane and said housing being dimensioned to respond to pressure differentials of much less than 1 inch of water.

4,523,611

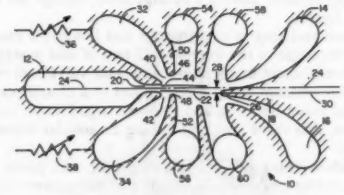
FLUIDIC ABSOLUTE-TO-DIFFERENTIAL PRESSURE CONVERTER

Tadeusz Drzewiecki, Silver Spring, Md., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed May 6, 1983, Ser. No. 492,120

Int. Cl.³ F15C *1/06, 4/00*

U.S. Cl. 137—804 **12 Claims**



1. An absolute-to-differential pressure converter for converting the absolute pressure of a pressurized fluid to a differential pressure indicating the pressure of the pressurized fluid relative to a predetermined reference pressure, comprising:

input means, connected to receive said pressurized fluid, for directing a jet of fluid along a first centerline at a velocity determined by said absolute pressure;

output means, disposed downstream from said input means, including first and second outlets separated by a splitter which is disposed asymmetrical to said first centerline such that at least a greater portion of said jet directed along said first centerline is received at the first outlet; and

control means for deflecting said jet towards said second outlet in accordance with said jet velocity such that the differential pressure generated by the jet between the first and second outlets is zero when said absolute pressure is equal to said predetermined reference pressure.

4,523,612

APPARATUS AND METHOD FOR SUPPRESSING VIBRATION AND DISPLACEMENT OF A BELLOWS

Thomas C. Kuklo, Ripon, Calif., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Apr. 15, 1983, Ser. No. 485,155

Int. Cl.³ F16L *55/04*

U.S. Cl. 138—30 **8 Claims**

1. An integrated system (10) comprising:

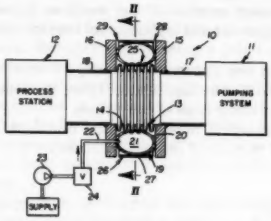
a first system (11) including a first radially disposed member (15);

a second system (12) including a second radially disposed member (16);

said first and second radially disposed members (15 and 16)

positioned on a respective side of inflatable damping means (19) and in contact therewith;

means (13) for communicating fluid between said first system (11) and said second system (12), including at least one flexible bellows (14), said bellows including therein a plurality of convolutions, interconnected therebetween



and secured between said first and second radially disposed members (15 and 16); and

said inflatable damping means (19) surrounding said bellows (14) in flexing relationship therewith for suppressing vibration and displacement thereof to substantially isolate said first (11) and said second (12) systems from each other.

4,523,613

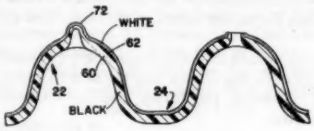
MULTI-LAYERED CORRUGATED CONDUIT WITH "BLACK-EYE" LIKE APERTURES

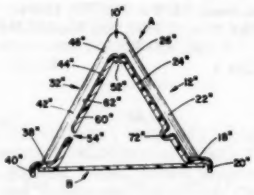
James L. Fouss; John J. Parker; James L. Child, Jr., all of Findlay, Ohio, and Donald W. Sting, New Canaan, Conn., assignors to Hancor, Inc., Findlay, Ohio

Continuation-in-part of Ser. No. 164,969, Jul. 1, 1980, Pat. No. 4,360,042, which is a continuation-in-part of Ser. No. 967,514, Dec. 7, 1978, Pat. No. 4,245,924. This application Nov. 6, 1981, Ser. No. 318,740

Int. Cl.³ F16L *11/11*; E02B *11/00*

U.S. Cl. 138—121 **7 Claims**





1. A multi-layered corrugated plastic conduit comprising:

at least a first longitudinally extending side wall, the side wall comprising an inner layer of a first plastic material and an outer layer of a second material, the side wall having a plurality of transversely extending alternating peaks and valleys;

the side wall defining a plurality of apertures therein, each aperture being defined by an opening in the outer layer which has a peripheral ring of the first material extending therethrough, the aperture being defined in and surrounded completely by the first material.

4,523,614

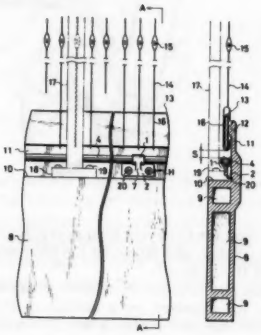
APPARATUS FOR DETECTION OF END BREAKAGE IN HEDDLE FRAME

Yoichi Shimizu, Izumishi, Japan, assignor to Kabushiki Kaisha Maruyama Seisakucho, Sakaishi, Japan

Filed Oct. 12, 1983, Ser. No. 541,040

Int. Cl.³ D03D *51/32*

U.S. Cl. 139—355 **6 Claims**



1. For use in a vertically reciprocable heddle frame having a heddle bar and at least one heddle, the heddle having a yarn warp hole and an electrically conductive engaging part loosely mounted on the heddle bar with a vertical play, a device for detecting breakage of yarn passing through the yarn warp hole in the heddle, said device comprising:

(a) an electrically conductive detecting element extending parallel to the heddle bar, said electrically conductive detecting element being positioned immediately below the electrically conductive engaging part of the heddle by a distance not greater than the vertical play of the electrically conductive engaging part of the heddle;

(b) a non-electrically conductive holder for supporting said electrically conductive detecting element in position to contact the electrically conductive engaging part of the heddle when the yarn passing through the yarn warp hole in the heddle breaks, said holder comprising:

(i) a resilient holding element having a through hole size, shaped, and positioned to receive and position said electrically conductive detecting element and a top opening sized and shaped so that said electrically conductive detecting element can pass therethrough when the top opening is opened against the resiliency of said resilient holding element, said top opening also being sized, shaped, and positioned so that the electrically conductive engaging part of the heddle can contact said electrically conductive detecting element through said opening while said electrically conductive detecting element is received in said through hole and

(ii) a holder body secured to said resilient holding element; and

(c) means for securing said non-electrically conductive holder on the heddle frame,

whereby, if an electric current is applied to said electrically conductive detecting element during downward movement of the heddle frame, the breakage of yarn passing through the yarn warp hole in the heddle can be detected because the breakage of the yarn permits the heddle to drop until the electrically conductive engaging part of the heddle makes contact with said electrically conductive detecting element, completing an alarm circuit.

4,523,615

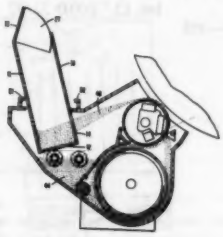
METHOD AND APPARATUS FOR IN SITU PURGING A XEROGRAPHIC DEVELOPER

David D. Feenstra, Larimer County; Robert L. Fey, and Cheryl A. Goin, both of Longmont, all of Colo., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 17, 1983, Ser. No. 476,005

Int. Cl.³ B65B *1/06*

U.S. Cl. 141—1 **9 Claims**



7. A method for removing used developer mix from a xerographic developer, and replacing the used mix with new mix, comprising the steps of:

packaging said new mix in an inner container which is protected for shipment by a combined overpack and mix removal tool, said overpack having a manually removable portion thereof which, when removed, exposes the interior cavity of said overpack;

opening an exterior surface of said xerographic developer in order to expose a portion of the mix-flow path of said developer;

removing said inner container from said overpack;

removing said portion from said overpack to thereby leave an opening;

inserting the now-empty overpack into said xerographic developer, in a position such that said opening intercepts said mix-flow path;

operating said developer to thereby cause the developer's used mix to pass through said opening as it enters the cavity of said overpack;

removing said overpack from within said xerographic developer;

placing the contents of said inner container within said xerographic developer; and

closing said developer's exterior surface.

4,523,616

APPARATUS FOR CONTROLLING THE FILLING OF CONTAINERS

Edith Kleinophorst Geb. Schädel, Kronprinzenstrasse 9, 4130 Moers, 1, Fed. Rep. of Germany, and Gerhard Grosskreuz, Volksdorfer Weg 174, 2000 Hamburg 65, Fed. Rep. of Germany

Filed Sep. 6, 1983, Ser. No. 529,825

Claims priority, application Fed. Rep. of Germany, Sep. 7, 1982, 3233093; Aug. 24, 1983, 3330446

Int. Cl.³ B65B *3/32*

U.S. Cl. 141—83 **6 Claims**

2. Apparatus for the simultaneous filling of a medium into several containers, such as tanks, drums, or packs, comprising:

(a) a main pipe line,

(b) a feed pump in the main pipe line for supplying the medium therethrough,

(c) at least two branch supply lines each having one end connected to the main pipe line for receipt of the medium therefrom,

(d) at least two valves, one valve in each branch supply line,

(e) at least two volume chambers, one volume chamber arranged in each branch supply line upstream of the valve, with an impeller with a bearing shaft arranged in the interior of each volume chamber to be rotated by the medium flowing therethrough to the valve,

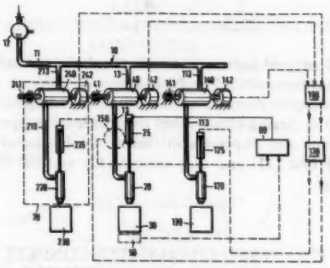
(f) means associated with one of the valves for determining the amount of the medium passing therethrough,

(g) a two-stage control cylinder directly connected to said one of the valves,

(h) a control element coupled to the last-named means and to the two-stage control cylinder and responding to the determined amount of the medium for controlling the two-stage control cylinder to control said one of the valves,

(i) at least one pneumatic two-stage control cylinder, each pneumatic two-stage control cylinder connected to one of the remaining ones of the valves,

(j) a plurality of flow recorders, one flow recorder connected to each of the volume chambers,



(k) a flow data storage device,

(l) means connecting the flow recorder of the volume chamber having the valve controlled by the determining means to the flow data storage device for storage, as a desired value, of the throughflowing medium quantity described by the last-named flow recorder,

(m) means connecting the flow data storage device of the other volume chambers for comparison of the desired value with the actual values of the other flow recorders, and

(n) means responsive to such comparison for controlling the other values so that on reaching the desired values for the volume chambers, the valves associated therewith are disconnected.

4,523,617

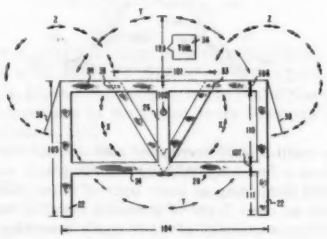
THREE-IN-ONE WORK STATION

George V. Tiedemann, RD #3, Box 706, Howell, N.J.

Filed Mar. 2, 1984, Ser. No. 585,364

Int. Cl.³ B25H *1/00*

U.S. Cl. 144—286 A **11 Claims**



1. Apparatus comprising:

a workbench frame having;

(a) four vertically extending support members;
(b) four horizontally extending members joining corresponding upper most portions of said support members together in forming a top frame structure
(c) two horizontally extending, oppositely positioned, members joining corresponding intermediate portions of adjacent support members together;
(d) two vertically extending, oppositely positioned, members joining said two horizontally extending members to the two of said four horizontally extending members positioned thereabove in forming a pair of side frame structures; and
(e) with each of said two vertically extending members being apertured at corresponding locations thereon;

a worktable in the form of a triangular solid presenting;
(a) three major surfaces, to each of which a desired electrically powered or manually operable worktool is securable; and
(b) two oppositely positioned side surfaces joining said three major surfaces together; and
(c) with each of said two side surfaces being apertured at corresponding locations thereon;

a transverse rod serially extending through one of said apertures of said two vertically extending members of said workbench frame, through said apertures of said two side surfaces of said worktable, and through said other aperture of said two vertically extending members in forming a fulcrum about which said worktable is rotatable within said workbench frame;

and means detachably coupling at least one selected location along said worktable surfaces to at least one selected location along said workbench frame for controllably locking said worktable in place once a desired worktool is rotated into desired position.

4,523,618

BRANCHED POLYMER, PROCESS FOR THE PREPARATION THEREOF, TIRE TREAD RUBBER COMPOSITION AND TIRE

Keisaku Yamamoto; Nobuyuki Yoshida; Yasushi Okamoto; Akio Imai; Tomoaki Seki, all of Ichihara; Hiroshi Furukawa, Ashiya, and Yuichi Saito, Nishinomiya, all of Japan, assignors to Sumitomo Chemical Company, Ltd., Osaka and Sumitomo Rubber Industries, Ltd., Kobe, both of, Japan

Filed Mar. 30, 1983, Ser. No. 480,348
Claims priority, application Japan, Mar. 30, 1982, 57-53387
Int. Cl.³ B60C *11/00*
U.S. Cl. 152—209 R **8 Claims**

1. A branched polymer which is a butadiene homopolymer or a copolymer of butadiene and an aromatic vinyl compound and has a glass transition temperature of not less than −50° C., an intrinsic viscosity in toluene, at 30° C., of 1.0 to 6.0 dl./g, and of which at least 70% by weight of the polymer chains has a branched structure of R_4Si, $R_3Si(CH_3)$ or R_4Sn in which R is a polymer radical.

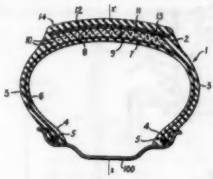
4,523,619

PROTECTIVE PLY FOR TIRE CROWN OF THREE-DIMENSIONAL STRUCTURE

Jacques Gouttebessis, Volvic, France, assignor to Compagnie Generale Des Etablissements Michelin, Clermont-Ferrand, France

Filed Oct. 4, 1983, Ser. No. 538,978
Claims priority, application France, Oct. 22, 1982, 82 17963
Int. Cl.³ B60C *9/18*
U.S. Cl. 152—527 **8 Claims**

1. A tire with a crown comprising a strengthening reinforcement and at least one protective play arranged above the strengthening reinforcement, characterized by the fact that the protective play has the following features:
(a) it comprises a three-dimensional fabric impregnated with rubber, said fabric having two principal faces;
(b) the fabric comprises warp threads and woof threads;
(c) the warp threads and the woof threads undulate;
(d) when the general orientation of the fabric is flat, the principal faces of the fabric being then assumed flat, each warp thread undulates in a warp thread plane perpendicular to the principal faces of the fabric, each warp thread being alternately tangent to one of the principal faces of the fabric and then to the other, and the woof threads are



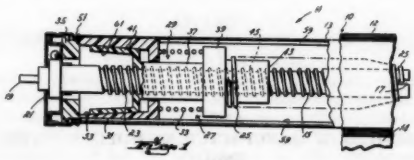
arranged between the warp threads in several woof thread planes in the thickness of the fabric, the woof thread planes being parallel to the principal faces of the fabric, each woof thread undulates in a woof thread plane;
(e) the warp threads and the woof threads are made with one or more materials whose rupture stress is less than 140 kg/mm^2; and
(f) the porosity of the fabric before impregnation with rubber varies from 60% to 90%.

4,523,620

WINDOW SHADE CLUTCH ASSEMBLY

Robert M. Mortellite, Hamilton, Ohio, assignor to Clopay Corporation, Cincinnati, Ohio

Filed Jan. 17, 1983, Ser. No. 458,439
Int. Cl.³ E06B *9/208*
U.S. Cl. 160—315 **7 Claims**



1. A tube assembly for preventing over-tensioning of a spring motor means in a window shade comprising:
a fixed shaft;
a housing rotatable relative to said fixed shaft;
spring motor means contained within said housing, said spring motor means being connected to said fixed shaft;
spool means axially movable along said fixed shaft, said spool means being connected to said spring motor means;
cup means rotatable with said housing;
clutch means including a first tapered surface formed in said spool means and a second tapered surface formed in said cup means, said first and second tapered surfaces of said clutch means being adapted to mate to permit rotation of said spool means with said cup means and housing;
said spool means being movable in a first axial direction along said shaft while rotating with said cup means and housing to effect increased tensioning of said spring motor means, said first and second tapered surfaces of said clutch means being operable to disengage said spool means from said cup means at a predetermined point of axial movement of said spool means in said first direction to prevent further tensioning of said spring motor means.

4,523,621

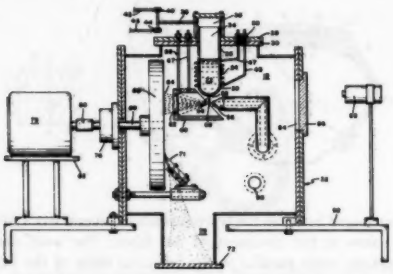
METHOD FOR MAKING METALLIC GLASS POWDER

Ranjan Ray, Randolph, N.J., assignor to Allied Corporation, Morris Township, Morris County, N.J.

Division of Ser. No. 349,807, Feb. 18, 1982, Pat. No. 4,386,896, which is a continuation of Ser. No. 23,413, Mar. 23, 1979, abandoned. This application Mar. 17, 1983, Ser. No. 476,004

Int. Cl.³ B22D *23/00*

U.S. Cl. 164—46 **12 Claims**



1. A method for making metallic glass powder, comprising the steps of:

(a) generating a jet of molten glass forming alloy;

(b) atomizing said jet into a stream of discrete molten metal droplets;

(c) directing the stream of atomized molten metal droplets against a moving chill surface to effect impingement and rapid solidification of the droplets thereon; and

(d) controlling the surface velocity of said chill surface, the velocity of said molten metal droplets and the shape of said stream to minimize overlap of the droplets during said impingement.

4,523,622

METHOD OF MANUFACTURING HOLLOW METAL INGOTS

Heinrich Faste, Grossenkneten, and Ali Bindernagel, Wermelskirchen, both of Fed. Rep. of Germany, assignors to Kocks Technik GmbH & Co., Hilden, Fed. Rep. of Germany

Continuation of Ser. No. 396,845, Jul. 9, 1982, abandoned. This application Mar. 14, 1984, Ser. No. 589,514

Claims priority, application Fed. Rep. of Germany, Sep. 2, 1981, 3134758

Int. Cl.³ B22D *7/04, 13/02*

U.S. Cl. 164—66.1 **6 Claims**

1. A method of manufacturing hollow metal ingots comprising the steps of:

(a) rapidly pouring a liquid metal melt into an upright or slightly inclined chill mould, the quantity of liquid metal poured into the mould corresponding to the total volume of the chill mould plus the shrinkage volume minus the volume of the desired axial hole in the final casting;

(b) closing said chill mould;

(c) tilting the closed chill mould into a substantially horizontal axial position;

(d) slowly rotating the chill mould about its longitudinal axis at a speed sufficiently low to avoid any appreciable centrifugal forces; and

(e) progressively cooling and solidifying the metal inwardly from the walls of the rotating chill mould during said slow rotation to form a hollow casting having the length and form of the chill mould and the desired axial passage

whereby the casting is substantially free from centrifugally created effects.

4,523,623

PLATE MOULD FOR CONTINUOUS CASTING

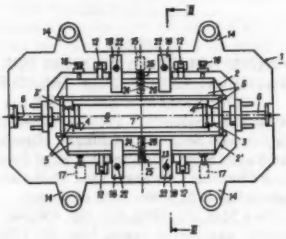
Günter Holleis, and Horst Wiesinger, both of Linz, Austria, assignors to Voest-Alpine Aktiengesellschaft, Linz, Austria

Filed Sep. 24, 1982, Ser. No. 422,873

Claims priority, application Austria, Oct. 9, 1981, 4340/81

Int. Cl.³ B22D *11/12, 33/04*

U.S. Cl. 164—436 **7 Claims**



1. In a plate mould for continuous casting, in particular for continuously casting steel slabs, and of the type including a carrying frame,

broad-side walls supported in said carrying frame,

end walls arranged between said broad-side walls, said broad-side walls and said end walls defining a mould cavity,

an adjustment means for displacing said broad-side walls normal to a longitudinal axis of said mould cavity, and

clamping means for fixing said broad-side walls relative to each other with said end walls interposed therebetween, the improvement wherein

said carrying frame comprises holding plate means arranged below and supporting said broad-side walls,

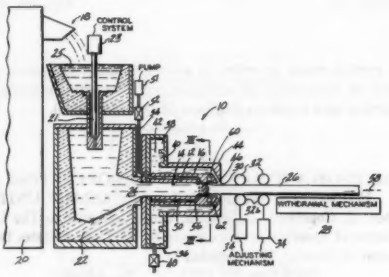
at least one clamp strap is provided for each broad-side wall for clamping said broad-side wall against said holding plate means for restraining vertical movement of said broad-side wall relative to said holding plate means and said carrying frame while permitting movement of said broad-side walls in the direction normal to said longitudinal axis, said clamp strap having a first end supported on said broad-side wall and a second end supported on said carrying frame, said improvement further comprising

a tensioning means for each of said clamp straps for clamping said clamp strap against said carrying frame, said tensioning means being accessible from above said mould.

4,523,624
CAST INGOT POSITION CONTROL PROCESS AND APPARATUS

Jonathan A. Dantzig, Hamden; Peter E. Sevier, and Gary L. Ungarean, both of Woodbridge, all of Conn., assignors to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Oct. 22, 1981, Ser. No. 313,885
Int. Cl.³ B22D *11/16*
U.S. Cl. 164—454 **9 Claims**



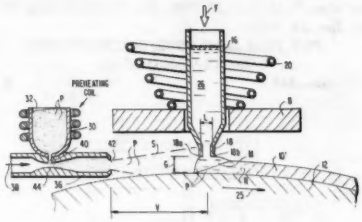
6. A process for casting molten metal comprising:
providing a mold having inner and outer walls, a thickness defined by said inner and outer walls, a longitudinal axis, and an exit;
surrounding said molten metal with said mold and forming a casting having an outer periphery by transferring heat away from said molten metal and through said mold;
passing said casting through said exit; and
maintaining said casting within said mold so that said casting outer periphery is substantially uniformly spaced from said inner wall, said step of maintaining comprising:
providing means for supporting said casting adjacent said mold exit;
providing first and second non-thermal detecting means adjacent the exit of said mold and within the mold wall;
measuring a first distance between a first point on said casting outer periphery and a first point on said inner wall of said mold with said first non-thermal detecting means and generating a first signal indicative of said first sensed distance;
measuring a second distance between a second point on said casting outer periphery and a second point on said inner wall of said mold with said second non-thermal detecting means and generating a second signal indicative of said second sensed distance;
comparing said first and second signal and generating a control signal for operating said supporting means to position said casting so that said first and second distances are substantially equal, unwanted distortions of said casting are substantially avoided and substantially uniform heat transfer occurs about the casting periphery.

4,523,625
METHOD OF MAKING STRIPS OF METALLIC GLASSES HAVING UNIFORMLY DISTRIBUTED EMBEDDED PARTICULATE MATTER

Dieter G. Ast, Ithaca, N.Y., assignor to Cornell Research Foundation, Inc., Ithaca, N.Y.

Filed Feb. 7, 1983, Ser. No. 464,256
Int. Cl.³ B22D *11/06, 19/14*
U.S. Cl. 164—461 **4 Claims**

1. A method of forming a continuous strip of amorphous or polycrystalline metal containing embedded particulate matter, said method comprising:
moving a chill body contact surface in a generally longitudinal direction at a constant predetermined velocity past the orifice of a slotted nozzle defined by a pair of generally parallel lips located proximate to said surface with a narrow gap therebetween and with said surface orifice generally perpendicular to the direction of movement of the surface of the chill body, and
forcing a stream of molten base metal through said nozzle orifice into contact with the surface of the moving chill body to form a melt puddle therebetween and to permit the metal to solidify thereon during movement away from the nozzle orifice to form a continuous metal strip,
the improvement comprising:

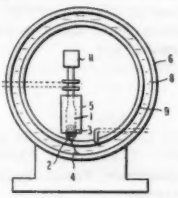


blowing second phase particles into the melt puddle from the exterior of said nozzle just prior to solidification on the chill body to effect a homogeneous distribution of high volume fractions of second phase particles within the strip with minimal contact time between the molten base metal and the second phase particles prior to solidification thereof;
whereby, said particulate matter is distributed spatially homogeneously in the ribbon, eliminating possible adverse chemical reactions between the particulate matter and said base metal, or melting of the particulate matter within the base metal prior to solidification thereof.

4,523,626
AMORPHOUS METAL FILAMENTS AND PROCESS FOR PRODUCING THE SAME

Tsuyoshi Masumoto, No. 3-8-22, Uesugi Sendai-shi, Miyagi; Akihisa Inoue, Miyagi, and Michiaki Hagiwara, Kyoto, all of Japan, assignors to Tsuyoshi Masumoto and Unitika, Limited, both of, Japan

Continuation of Ser. No. 254,714, Apr. 16, 1981, abandoned. This application Apr. 9, 1984, Ser. No. 597,576
Claims priority, application Japan, Apr. 17, 1980, 55-50998; Sep. 16, 1980, 55-128219; Feb. 10, 1981, 56-18589
Int. Cl.³ B22D *11/06*
U.S. Cl. 164—463 **7 Claims**



1. A process for producing an amorphous metal alloy filament containing Fe as a main component and having a round cross-section which comprises jetting a molten alloy having amorphism-forming ability and containing Fe as a main component into a revolving body containing a cooling liquid from a spinning nozzle to form a solidified filament by cooling, and continuously winding the filament on the inner wall of said

revolving body by means of the centrifugal force of said revolving body, wherein the circumferential rate of revolution of said revolving body is equal to or higher than the rate of jetting of the molten metal from the spinning nozzle.

4,523,627

PROCESS FOR HIGH-SPEED VERTICAL CONTINUOUS CASTING OF ALUMINIUM AND ALLOYS THEREOF

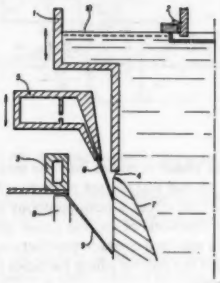
Yves Cans, Saint Egreve; Richard Gonda, Le Grand Lemps, and Marc Tavernier, Voiron, all of France, assignors to Societe de Vente de L'Aluminium Pechiney, Paris, France

PCT No. PCT/FR82/00115, § 371 Date Mar. 7, 1983, § 102(e) Date Mar. 7, 1983, PCT Pub. No. WO83/00107, PCT Pub. Date Jan. 20, 1983

PCT Filed Jul. 7, 1982, Ser. No. 474,669

Int. Cl.³ B22D *27/02*

U.S. Cl. 164—467 **6 Claims**



1. A process for the vertical continuous casting of aluminum and alloys thereof in the form of billets or plates, the smallest dimension of which does not exceed 150 mm, at a speed greater than 500 mm/minute, comprising:

(a) feeding liquid metal into a moulding zone by means of a top feeder head;

(b) shaping said liquid metal discharged from said feeder head by applying an electromagnetic field generated by an induction means;

(c) cooling said liquid metal by an annular cooling means disposed around said feeder head, thereby initiating solidification of said liquid metal by forming an outer shell in the periphery region, wherein the base plane of said top feeder head and the solidification front are separated by liquid metal;

(d) continuing the shaping of said liquid metal by spraying water onto the outer surface of said outer shell by said annular cooling means, wherein the distance between the base plane of said top feeder head and the plane passing through the solidification front at the periphery region of the solidified product is kept constant by vertically controlling the position of said top feeder head with respect to said induction means; and

(e) recovering a cast product therefrom.

4,523,628

PROCESS FOR CASTING METALS IN WHICH MAGNETIC FIELDS ARE EMPLOYED

Charles Vives, Chateaurenard, France, assignor to Aluminium Pechiney, Paris, France

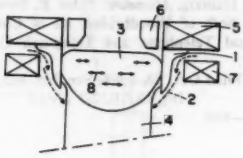
Filed Jul. 7, 1983, Ser. No. 511,398

Claims priority, application France, Jul. 23, 1982, 82 1319

Int. Cl.³ B22D *11/10, 27/02*

U.S. Cl. 164—468 **9 Claims**

1. In a method for continuously and semi-continuously casting metals where the molten metal to be cast is poured into a mold to be solidified progressively into dendrites and solid mass, the improvement comprising applying a stationary magnetic field to the molten metal in the mold, and simultaneously applying a variable magnetic field to the molten metal in the mold, said fields being applied to act in the same direction on



the molten metal in order to generate radial vibrations in the metal in the course of solidification, thereby improving the structure and surface condition of the cast metal.

4,523,629

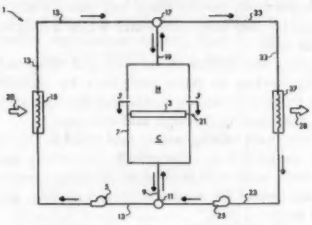
METHOD AND APPARATUS FOR OPERATING AN IMPROVED THERMOCLINE STORAGE UNIT

Robert J. Copeland, Lakewood, Colo., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Sep. 30, 1982, Ser. No. 429,740

Int. Cl.³ F28D *21/00*

U.S. Cl. 165—1 **35 Claims**



1. An improved method for operating a thermocline storage unit, said method comprising the steps of:

(a) providing a tank containing a first fluid at a first density and a second fluid at a second density, said first density being less than said second density wherein said fluids stratify within said tank with said first fluid above the second fluid and forming a natural interface region therebetween extending substantially horizontally,

(b) maintaining said first fluid at a first temperature and maintaining said second fluid at a second temperature, said first temperature being higher than said second temperature,

(c) using a barrier member to substantially separate said first and second fluids from each other substantially at said horizontally extending interface region,

(d) selectively increasing and decreasing the respective volumes of the first and second fluids in said tank wherein said horizontally extending interface region therebetween moves substantially vertically relative to said tank,

(e) maintaining a difference in temperature between said first fluid of said first tank and said second fluid of said second tank, and maintaining such separation of said step (c) as said horizontally extending interface region moves vertically relative to said tank, and

(f) adapting said barrier member to float between said first and second fluids substantially at said interface region as said interface region moves relative to said tank to maintain such separation of step (c) and providing said barrier member with a plurality of nodules, said nodules being situate at said barrier member such that said barrier member is enabled to remain substantially centered relative to

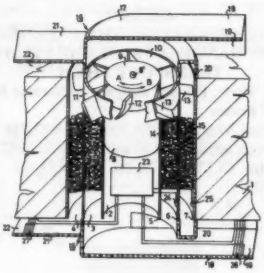
said tank while permitting relatively small portions of said fluids to freely pass by said barrier member.

4,523,630

ROOM VENTILATOR

Klas R. Wiklund, Täby, Sweden, assignor to Wirab System A.B., Täby, Sweden

Filed Mar. 6, 1984, Ser. No. 586,817
Claims priority, application Sweden, Mar. 16, 1983, 8301447
Int. Cl.³ F24D *11/00*
U.S. Cl. 165—18 **10 Claims**



1. Ventilator adapted to be located in a wall for providing air exchange through the wall, said ventilator including:

(a) a double-acting, controllable, axial-flow fan means having an impeller with an inner blade ring and an outer impeller blade ring, the blades in said two rings being set to transport air in mutually different directions through said blade rings during rotation of said impeller;

(b) a coaxial duct having an inner channel in communication with said inner blade ring of said impeller, and an outer channel in communication with said outer impeller blade ring of said impeller;

(c) reversing means, connected to said fan means, for controlling said fan means to reverse the direction of said impeller so that said impeller alternately rotates in one or the other direction; and

(d) regenerating means, located in both said inner channel and said outer channel for alternately absorbing and emitting heat, and absorbing and desorbing moisture;

(e) said ducts and said blade rings being mutually dimensioned such that the air flow provided in one of said ducts in one direction when the impeller is rotating in a first direction is essentially the same as the air flow provided in the other of said ducts in the same direction when said impeller is rotating in the opposite direction.

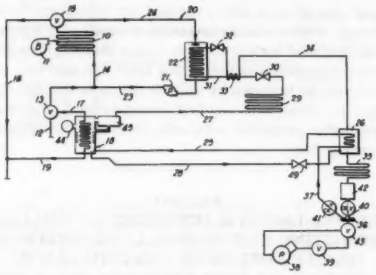
4,523,631

VEHICLE AIR CONDITIONING AND HEATING SYSTEM

David A. McKinney, 6754 Tara Blvd. - J2, Jonesboro, Ga. 30236

Filed May 11, 1983, Ser. No. 493,716
Int. Cl.³ B60H *3/00*
U.S. Cl. 165—43 **5 Claims**

1. A unified heating and air conditioning system for automotive vehicles and the like comprising a circulating loop for hot vehicle engine coolant under the influence of an engine operated coolant pump, a heating-cooling coil connected in said circulating loop and being at least partly in the passenger compartment of a vehicle having a blower means to direct an air stream over the heating-cooling coil, an independent engine coolant circulating loop including a common branch with the first-named circulating loop, the common branch containing said heating-cooling coil, pumping means to circulate engine coolant through the independent loop, an absorption refrigeration system external to the passenger compartment of a vehicle including a refrigerant evaporator connected in said independent loop to chill the engine coolant being pumped through such loop and a generator, and a second circulating loop for hot engine coolant under influence of said coolant pump connected into the first-named circulating loop and including said generator, whereby normally wasted heat in the hot engine coolant is utilized by the generator as thermal energy to operate the absorption refrigeration system, and valving connected between the first-named, independent and said second circulating loops to selectively control the flow of engine coolant



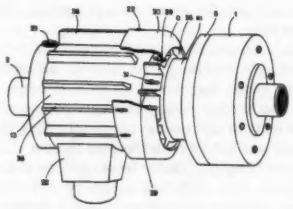
therethrough at required times, and the absorption refrigeration system further comprising a refrigerant condenser connected between said generator and said refrigerant evaporator, an absorber connected between the evaporator and said generator, a solution condenser connected with the absorber, solution pumping means connected between the solution condenser and the absorber, and restrictor valve means connected between the refrigerant condenser and evaporator and between the evaporator and the absorber.

4,523,632

COOLING SYSTEM OF ROTARY FLUID PRESSURE CYLINDER FOR CHUCKING IN MACHINE TOOLS

Akira Nobukawa, and Tatsue Sawaguchi, both of Hiroshima, Japan, assignors to Kitagawa Iron Works Co. Ltd., Japan

Filed Apr. 28, 1980, Ser. No. 144,008
Claims priority, application Japan, Apr. 26, 1979, 54-52299
Int. Cl.³ F24H *3/00*
U.S. Cl. 165—47 **3 Claims**



1. A rotary hydraulic cylinder device, for mounting on a spindle of a machine tool for operating a workpiece chuck, comprising:

(i) an oil supply unit

(ii) a rotor having an axial portion disposed within said oil supply unit, said axial portion having a first outer circumferential surface, and a second outer circumferential surface of smaller diameter than said first surface, said axial portion including oil flow passages,

(iii) first and second bearing means disposed between said oil supply unit and said axial portion and respectively positioned axially beyond each end of said second circumfer-

ential surface, whereby said rotor may rotate about an axis relative to said oil supply unit,

(iv) fan means mounted on said axial portion at said first circumferential surface

(v) a plurality of cooling fins disposed externally on said oil supply unit, said fins being elongated and positioned extending along said supply unit parallel to the axis of rotation of the rotor,

(vi) a cylindrical cover element on said oil supply unit, said cover element overlying part of each of said cooling fins and extending axially over said fan means and having a flange which extends inwardly towards said second circumferential surface so as to bound therewith an air gap, whereby upon rotation of said rotor and said fans means, external air is drawn by said fan means in through said air gap in contact with said first circumferential surface and is thereafter propelled outwardly from said cover past said cooling fins.

4,523,633

HEATER UNIT FOR AUTOMOTIVE VEHICLES, PERMITTING EASY REMOVAL AND FITTING OF HEATER CORE FROM AND INTO CASING

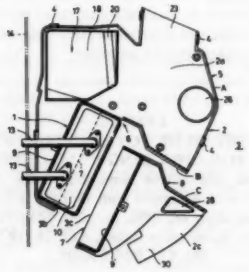
Kenji Furukawa, and Shinji Wakabayashi, both of Saitama, Japan, assignors to Diesel Kiki Co., Ltd., Saitama, Japan

Filed Apr. 13, 1983, Ser. No. 484,570

Claims priority, application Japan, Apr. 30, 1982, 57-63958[U]

Int. Cl.³ F28F *7/00*

U.S. Cl. 165—76 **3 Claims**



1. A heater unit for an automative vehicle, comprising:

a heater core;

a casing accommodating said heater core therein,

said casing comprising first, second and third casing elements joined together at peripheral edges thereof, said first and second casing elements cooperating to form a main body of said casing, said third casing element having at least one hot air outlet formed therein, said third casing element being detachable from said first and second casing elements, said peripheral edges of said first and second casing elements having part thereof forming in cooperation an opening for removal and fitting of said heater core from and into said main body of said casing therethrough, and said third casing element having a peripheral edge joined in part with said part of said peripheral edges of said first and second casing elements forming said opening;

a passage formed in said main body of said casing for heating intake air, said heater core being arranged across said passage;

an air mixing chamber formed in said main body of said casing for mixing intake air with hot air from said passage;

a first damper disposed in said main body of said casing for adjusting the ratio in amount between intake air guided into said passage and one guided into said air mixing chamber;

at least one air outlet opening formed in said main body of said casing, said at least one air outlet opening being other than said at least one hot air outlet of said third casing element; and

a second damper disposed in said main body of said casing for selectively guiding air from said air mixing chamber into said at least one air outlet opening and said at least one hot air outlet; and

said third casing element has substantially solely said at least one hot air outlet formed therein.

4,523,634

DEVICES FOR SEPARATING THE CLEANING BODIES OF TUBE EXCHANGERS FROM THE FLUIDS WHICH TRANSPORT THEM

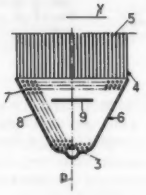
André Bizard, Paris, France, assignor to Societe En Nom Collectif, Paris, France

Filed May 24, 1983, Ser. No. 497,718

Claims priority, application France, Jun. 9, 1982, 82 10055

Int. Cl.³ F28G *13/00*; B01D *35/02*

U.S. Cl. 165—95 **14 Claims**



1. A device for separating cleaning bodies exiting from a tube type heat exchanger from a fluid which carries the cleaning bodies after the bodies have served in cleaning the tubes of the heat exchanger, said device comprising first and second successive separator stages including a grid mounted in a duct section having a longitudinal axis Z, connected to the outlet of the heat exchanger and intended to gather together the cleaning bodies in two directions X and Y which are perpendicular to each other and transverse to said duct section, and a collector connected to the output of the second separator stage and arranged to receive the cleaning bodies separated from the main current of the fluid and to discharge the cleaning bodies from the duct, said grid being located in said first stage and being formed from parallel equispaced bars whose spacing is less than the smallest overall dimension of the cleaning bodies, said grid being mounted obliquely across the duct section with the bars thereof parallel to the plane containing the direction X and the axis Z of the duct section, so that the fluid passes through said grid but the cleaning bodies are stopped by the grid and are guided along the bars of the grid as far as the downstream end thereof while being deflected by the bars in direction X, the second stage comprising a hopper converging in the downstream direction and in the direction Y, said hopper being mounted so as to receive the cleaning bodies coming from the downstream end of the first stage, the cross section of said hopper being elongate in the direction Y, at least one of the walls of said hopper extending in the direction Y being permeable to the fluid and impermeable to the cleaning bodies, and at least one of the walls of the hopper extending parallel to the direction X forming a deflector for deflecting the cleaning bodies, in the direction Y, as far as the downstream collector, said deflector comprising a bridge extending across the channel defining the current of fluid charged with cleaning bodies, at a level between the downstream region of the two separator stages, these regions included, from a wall of said channel as far as the opposite wall in the direction X, but not in the direction Y, the bridge creating swirls in the fluid current down-

stream of the bridge and the downstream collector being disposed so that an upstream orifice thereof opens opposite one of the swirls created by the presence of said bridge in said current downstream of said bridge.

4,523,635

METAL HYDRIDE HEAT PUMP SYSTEM

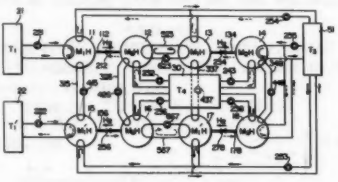
Tomoyoshi Nishizaki, Suita; Minoru Miyamoto, Kusatsu; Kazuaki Miyamoto, Amagasaki; Ken Yoshida, Ibaraki; Katsuhiko Yamaji, and Yasushi Nakata, both of Osaka, all of Japan, assignors to Sekisui Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 30, 1982, Ser. No. 403,877

Claims priority, application Japan, Jul. 31, 1981, 56-120995; Apr. 5, 1982, 57-56821

Int. Cl.³ F25B *15/00*; F28D *21/00*

U.S. Cl. 165—104.12 **13 Claims**



1. A metal hydride heat pump system comprising: a plurality of operating units, each operating unit comprising a combination of a first metal hydride having a lower equilibrium dissociation pressure at an operating temperature and a second metal hydride having a higher equilibrium dissociation pressure at said operating temperature and means for causing hydrogen to flow freely only between the two metal hydrides in the respective operating units, the equilibrium dissociation pressure characteristics of at least one of the first and second metal hydrides in a given operating unit differ from those of at least one of the first and second metal hydrides in at least one other operating unit; each of said operating units having high temperature heat transfer medium source means, medium temperature heat transfer medium source means and a low temperature heat transfer medium source means, said first metal hydride being switchably connected in heat transfer relation to said high-temperature heat transfer medium source means and said medium temperature heat transfer medium source means, and the second metal hydride being switchably connected in heat transfer relation to said medium temperature heat transfer medium source means and said low temperature heat transfer medium source means, at least one of said heat transfer medium source means being common to at least two operating units, whereby when each of the operating units is operated such that in one cycle hydrogen is released from the first metal hydride after the first metal hydride has been heated to the temperature of the high temperature heat transfer medium, the released hydrogen is exothermally occluded by the second metal hydride after the second metal hydride has been heated to the temperature of the medium temperature heat transfer medium, and then hydrogen is endothermally released from the second metal hydride after the second metal hydride has been heated to the temperature of the low temperature heat transfer medium, and the released hydrogen is exothermally occluded by the first metal hydride after the first metal hydride has been heated to the temperature of the medium temperature heat transfer medium, heat absorption by the second metal hydride during release of hydrogen at said low temperature can be used for cooling and heat generated by the first metal hydride during occlusion at said medium temperature and/or heat generated by said second metal hydride during occlusion at said medium temperature can be used for heating.

4,523,636

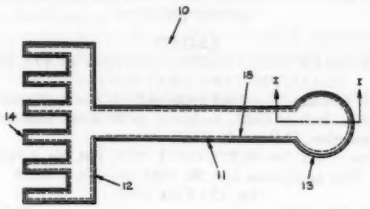
HEAT PIPE

Roelf J. Meijer, and Benjamin Ziph, both of Ann Arbor, Mich., assignors to Stirling Thermal Motors, Inc., Ann Arbor, Mich.

Filed Sep. 20, 1982, Ser. No. 420,047

Int. Cl.³ F28D *15/00*

U.S. Cl. 165—104.26 **7 Claims**



1. A heat pipe including a duct having at opposing ends an evaporator and a condenser; a wick capable of transporting liquid with capillary action lining internal surfaces of said duct; and a heat transport medium contained by said duct for transporting heat between said evaporator and said condenser, wherein the improvement comprises: a plurality of hollow fins lined with said wick and with a lining of coarse porous material capable of supporting compressive load thereby increasing structural stiffness of said fins with the inside width of said hollow fin being defined by twice the thickness of the coarse porous material added to twice the wick thickness and located at the evaporator end of said duct in fluid communication with the interior of said duct, said fins having substantially flat parallel sides and being arranged in a generally parallel spaced relation with each other to enable heating of the interiors of said fins from a heat source passing heat through and by said flat sides thereof, and the spaces within said hollow fins being open to said duct to allow liquid and vaporous forms of said heat transfer medium to communicate therebetween.

4,523,637

SYSTEM FOR THE REFRIGERATION OF LIQUIDS AND/OR GASES

Carlos A. D. Abramo, Av. Almirante Ari Parreiras 337-ap 201, Niteroi, Rio de Janeiro-24230, Brazil

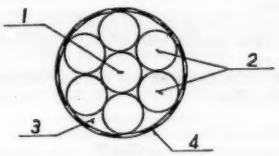
PCT No. PCT/BR81/00010, § 371 Date Jun. 29, 1982, § 102(e) Date Jun. 29, 1982, PCT Pub. No. WO82/01937, PCT Pub. Date Jun. 10, 1982

PCT Filed Nov. 25, 1981, Ser. No. 396,916

Claims priority, application Brazil, Nov. 26, 1980, 8007709

Int. Cl.³ F28D *7/00*

U.S. Cl. 165—104.34 **7 Claims**



1. Heat exchange system comprising a central internal tube through which a refrigerating medium passes,

a plurality of external heat exchanger tubes completely surrounding the periphery of said central internal tube, each and every heat exchanger tube in surface to surface contact with the periphery of said central internal tube through which the medium to be refrigerated passes,

each and every said heat exchanger tube in surface to surface contact with two adjacent ones of said heat exchanger

tubes as well as in surface to surface contact with the periphery of said central internal tube and

an outer insulating tube surrounding and engaging all said external heat exchanger tubes and maintaining them in contact with each other and in contact with said central internal tube thereby creating a cold chamber enclosing all of said tubes.

4,523,638

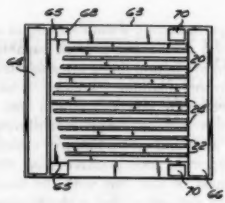
INTERNALLY MANIFOLDED UNIBODY PLATE FOR A PLATE/FIN-TYPE HEAT EXCHANGER

Irwin E. Rosman, Woodland Hills, and William R. Wagner, Los Angeles, both of Calif., assignors to Rockwell International Corporation, El Segundo, Calif.

Division of Ser. No. 80,877, Oct. 1, 1979, Pat. No. 4,347,896. This application Apr. 30, 1982, Ser. No. 375,510

Int. Cl.³ F28F *3/04*

U.S. Cl. 165—167 **22 Claims**



1. A plate for plate/fin-type heat exchanger comprising:

an open-faced plate, for channeling a fluid;

at least one interior inlet oriented transversely to said plate, said plate having a top, said interior inlet oriented through the top of said open-faced plate;

one pair of diagonally positioned integral interior side manifolds for each of said interior inlets wherein each pair comprises one integral interior side open manifold positioned at said interior inlet and an integral interior side closed manifold diagonally positioned in the opposite side wall;

means for internally manifolding, wherein said means extends the full width of said plate and are contiguous with said interior inlet;

a closed end lateral with and adjacent to said means for internally manifolding;

a closed end external integral manifold integral with and sealably separated form said closed end;

a plurality of contact fins and channels for directing fluid flow and for enhancing heat transfer, and wherein said contact fins and channels are contiguous with and transverse to said means for internally manifolding;

an open end port contiguous with said contact fins and channels;

an open end external integral manifold opposite said closed end integral external manifold for collecting and directing fluids; and

a bottom for mating with said fins and said open face of an adjacent plate.

4,523,639

RAM TYPE BLOWOUT PREVENTERS

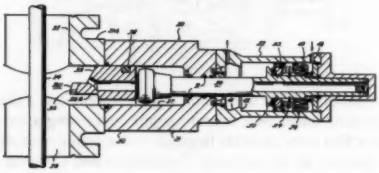
Roland M. Howard, Jr., Houston, Tex., assignor to Koomey Blowout Preventers, Inc., Houston, Tex.

Filed Nov. 21, 1983, Ser. No. 553,529

Int. Cl.³ E21B *33/06*

U.S. Cl. 166—55 **16 Claims**

1. A blowout preventer, comprising a housing having a bore therethrough and chambers therein intersecting the bore, a ram movable inwardly and outwardly within each chamber toward and away from the other ram or rams, said rams having cutting edges on their inner ends which cooperate with one another to shear a pipe within the bore, as the rams move inwardly toward one another, and means for sealing with respect to one another and with the chambers to close the bore, upon shearing of the pipe and continued inward movement of the rams, and an actuator for so moving each of the rams, comprising a cylinder having an inwardly facing locking shoulder near its inner end and an outwardly facing stop shoulder outwardly of the locking shoulder, an axially reciprocable rod extending from the cylinder into the chamber for connecting with the ram therein, a pair of pistons sealably reciprocable along the rod within the cylinder, respectively, and with respect to one another, means providing a lost motion connection between the pistons, means for alternately supplying operating fluid to and exhausting operating fluid from the cylinder on opposite sides of the pistons in order to move the pistons inwardly and outwardly, locking elements disposed about the rod, means mounting the locking elements on the rods for movement inwardly and outwardly therewith and for radial expansion and contraction between contracted positions in which they



may move with the rod past the stop shoulder into and out of positions opposite the locking shoulder and expanded positions in which they are engageable with the locking shoulder to lock the rams in closed position, means engageable with the stop shoulder to stop inward movement of one of the pistons when the pipe has been sheared, and holding said locking elements in contracted position, as they move axially inwardly with the rod and other piston beyond the shoulder, and then releasing said locking elements for radial expansion into locking engagement with the locking shoulder, as the rod continues to move inwardly with the other piston to move the ram connected to the rod to closed position, and means responsive to inward movement of the other piston with respect to the rod for expanding the locking elements into engagement with the locking shoulder, when released, and to outward movement of the other piston with respect to the rod for releasing the locking elements from locking engagement whereby they may be contracted and moved outwardly with the rod and other piston beyond the stop shoulder as the rams are withdrawn to open position.

4,523,640

ARM RELEASE SYSTEM FOR WELL LOGGING APPARATUS

Herbert C. Wilson, Houston, and Perumalagaram S. Sankaran, Katy, both of Tex., assignors to Dresser Industries, Inc., Dallas, Tex.

Filed Jan. 23, 1984, Ser. No. 573,263

Int. Cl.³ E21B *23/00, 17/10*

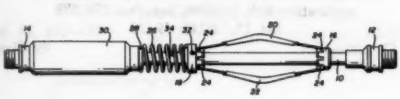
U.S. Cl. 166—64 **17 Claims**

1. A well logging apparatus, comprising:

an elongated body member adopted to traverse a borehole;

at least one arm member pivotally attached to said body member;

means for biasing said arm member outwardly with respect to said body member; and



temperature responsive means for restraining said arm member in a closed position during entry into said borehole.

4,523,641

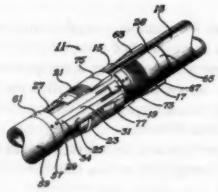
LINER HANGER WITH CHANNEL GUIDES

Phillip H. Manderscheid, Cypress, Tex., assignor to Hughes Tool Company, Houston, Tex.

Filed Jan. 27, 1984, Ser. No. 574,428

Int. Cl.³ E21B *23/00, 23/04*

U.S. Cl. 166—208 **5 Claims**



1. A liner hanger of the type used to hang a well liner in a surrounding well bore, comprising:

a tubular mandrel connectible into a liner string;

a set of circumferentially-spaced, gripping slips mounted about said mandrel, each of said gripping slips having a spring arm extending therefrom in axial alignment with said mandrel;

a tapered, slip expander cone mounted on said mandrel exterior above each of said slips for expanding said slips radially outwardly in the direction of the surrounding well bore responsive to opposite relative movement of said slips and cones;

at least one channel guide formed on the exterior of said mandrel in longitudinal alignment with one of said expander cones, said channel guide including a slot portion for slidably receiving the spring arm of one of said gripping slips for supporting said slip on the exterior of said mandrel; and

setting means for sliding said spring arms within said channel guides to thereby urge said slips in the direction of said cones to effect the outward, radial expansion of said slips to thereby hang said mandrel and, in turn, said liner within the well bore.

4,523,642

OIL RECOVERY PROCESS EMPLOYING CO_2 PRODUCED IN SITU

Valadi N. Venkatesan, Arlington, Tex., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Apr. 9, 1984, Ser. No. 598,137

Int. Cl.³ E21B *43/22, 43/24*

U.S. Cl. 166—272 **15 Claims**

1. A method for the recovery of oil from a subterranean, permeable, viscous oil-containing formation penetrated by at least one injection well and at least one spaced-apart production well, said wells being in fluid communication with a substantial portion of the formation, comprising:

(a) injecting a predetermined amount of steam into the formation via said injection well;

(b) injecting a sufficient amount of a mixture of sodium bicarbonate and citric acid into the formation via said injection well that react in the formation to form a predetermined amount of carbon dioxide;

(c) injecting a driving fluid into the formation via said injection well to force said carbon dioxide through said formation to displace said oil; and

(d) recovering fluid including oil from said formation via said production well.

4,523,643

WELL PERFORATING AND COMPLETION APPARATUS AND ASSOCIATED METHOD

Jody R. McGlothen, Garland, Tex., assignor to Dresser Industries, Inc., Dallas, Tex.

Filed Dec. 15, 1983, Ser. No. 561,849

Int. Cl.³ E21B *43/112*

U.S. Cl. 166—297 **21 Claims**

1. A perforating and completing apparatus, including:

(a) a packer connectable to the lower end portion of a tubing string in a well bore providing fluid communication for well fluids through an inner passageway;

(b) a disconnectable hollow coupling connected in fluid communication with said tubing string and below said packer;

(c) a tubing vent assembly connected in fluid communication with said tubing string and mounted in depending relation to said disconnectable coupling;

(d) a well perforating gun assembly mounted in the depending relation with said tubing vent assembly and including a hydraulically operable detonator mounted with a perforating gun thereof; and

(e) an auxiliary hydraulic fluid path connectable to a source of fluid pressure at an earth surface location at a well to said hydraulically operable detonator in order to communicate hydraulic fluid pressure to said detonator for actuating said detonator.

4,523,644

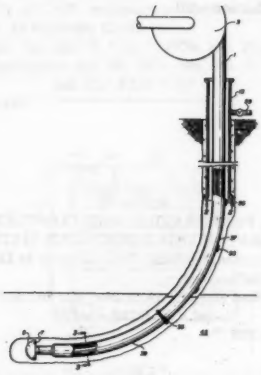
THERMAL OIL RECOVERY METHOD

Newton B. Dismukes, 2952 Buttonwood Dr., Carrollton, Tex. 75006

Continuation-in-part of Ser. No. 933,272, Aug. 14, 1978, abandoned, which is a continuation-in-part of Ser. No. 829,810, Dec. 23, 1977, abandoned. This application Oct. 27, 1983, Ser. No. 546,018

Int. Cl.[3] E21B *43/24, 36/00*

U.S. Cl. 166—302 29 Claims



1. A system for recovering petroleum from a petroleum containing formation penetrated by a well bore having a substantially horizontal portion within the petroleum containing formation and extending to the earth's surface comprising:

a. a steam generator located at the earth's surface;

b. a power source at the earth's surface;

c. a flexible conduit extending from the earth's surface through a substantial length of the horizontal portion of the well bore, said conduit including:

(i) a pair of tubular members forming a closed loop for the circulating of steam from the steam generator to the vicinity of the lower terminal end of the conduit and return of aqueous condensate;

(ii) a separate tubular member extending to the vicinity of the lower terminal end of the conduit for conducting petroleum produced from the formation to the earth's surface; and

(iii) a means for conducting power from the power source to the lower terminal end of said conduit;

d. means affixed to t end of the conduit for generating forward thrust upon the application of power thereto carried by said conduit; and

e. at least one flow path interconnecting the exterior of the conduit within the petroleum containing formation and the separate tubular member.

10. A method for producing a desired substance, having a viscosity which is decreased by an increase in temperature, from a subsurface stratum; said method comprising:

a. forming a bore hole into said stratum;

b. filling at least a portion of said bore hole with liquid;

c. inserting into said bore hole a flexible conduit neutrally buoyant in said liquid, said conduit comprising a fluid conveying means and means for increasing the temperature of said desired substance;

d. heating said desired substance by closed circulation of heated fluid through said flexible conduit; and

e. producing said desired substance.

4,523,645

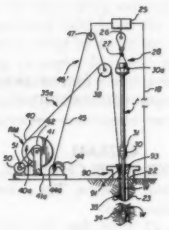
METHOD OF AND APPARATUS FOR MOVING REELED MATERIAL INTO AND RETRIEVING IT FROM THE UPPER END OF A WELL BORE IN THE EARTH'S SURFACE

Boyd B. Moore, 427 Mignon, Houston, Tex. 77024

Continuation of Ser. No. 267,087, May 26, 1981. This application Feb. 3, 1984, Ser. No. 576,888

Int. Cl.[3] E21B *19/22*

U.S. Cl. 166—385 49 Claims



1. Apparatus for running a well string composed of tubular joints into the upper end of a well bore in the earth's surface while simultaneously lowering material connected to the well string into the upper end of the well bore including:

a. engaging means engageable with a tubular joint to lower it into the well bore;

b. first support means connected to said engaging means to lower said engaging means relative to the well bore upper end;

c. reel means on which the material is reeved;

d. movable means supporting the material which extends between its connection to the well string and said reel means; and

e. means to enable the material to be pulled into the well bore along with the well string to which it is connected without rotating said reel means on which the material is reeved, said means including:

second support means connected to said movable means to position it in elevated position in relation to the well bore upper end and to accommodate lowering of said movable means relative to the well bore upper end as a length of the material is pulled into the well bore upper end when the well string tubular joint is lowered into the well bore by said support means.

19. A method of simultaneously lowering a well string formed of a plurality of end-to-end connected tubular joints into the upper end of a well bore along with a portion of material which extends from reel means and which reeled material has one end connected to the well string comprising the steps of:

a. supporting the well string in the well bore in an initial predetermined position with an upright tubular joint thereof extending above the upper end of the well bore;

b. supporting the material portion extending between its connection to the well string and the reel means in a predetermined elevated position relative to the well bore upper end to accommodate downward movement thereof;

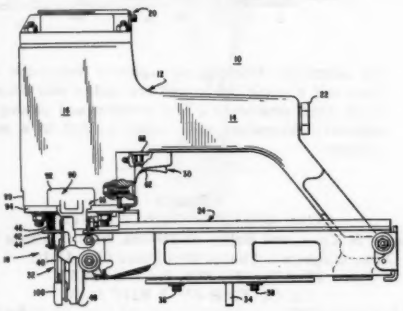
c. locking against rotation the reel means which supports the reeled material; and

d. lowering the well string including the upright tubular joint into the well bore to pull into the well a portion of the elevated material and extending between the reel means and the connection thereof with the well string.

4,523,646
FASTENER DRIVING TOOL

Richard H. Doyle, Mt. Prospect, and Lee B. Fiori, Melrose Park, both of Ill., assignors to Duo-Fast Corporation, Melrose Park, Ill.

Continuation of Ser. No. 155,767, Jun. 2, 1980, abandoned. This application Jul. 22, 1983, Ser. No. 516,194
Int. Cl.³ B25C 5/13
U.S. Cl. 173—15 13 Claims



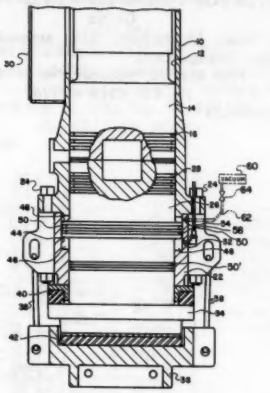
8. An apparatus for controlling the driving of fasteners by a fluid actuated drive tool wherein said tool is of the type including a housing, a cylindrical sleeve movably mounted in said housing, a sleeve seal mounted in said housing and engaged by said sleeve during static and return modes of said tool and spaced from said seal during the drive mode, means for moving said sleeve into and out of engagement with said seal, a piston reciprocally mounted in said sleeve, a driver secured to said piston, means for driving said piston and driver through said drive mode, and for returning said piston and driver to said static mode, means for selectively operating said driving means, said apparatus comprising a control member, means for allowing manual positioning of said control member in either a first location at least partially encircling said sleeve spaced from said seal to allow fluid flow between said sleeve and said seal and a second location at least partially encircling said sleeve and said seal during said drive mode to inhibit by a predetermined amount the fluid flow therebetween.

4,523,647
POWER HAMMER

Anthony E. W. Last, Charlotte, N.C., assignor to International Construction Equipment, Inc., Matthews, N.C.

Filed Mar. 16, 1983, Ser. No. 475,762
Int. Cl.³ B25D 9/00
U.S. Cl. 173—133 6 Claims

1. A power hammer device for driving piles and the like including a housing in which a ram is arranged for reciprocating vertical movement to strike, during its downward movement, an anvil slidably carried within the lower portion of said housing, and including combustion means operative upon said ram striking said anvil to propel said ram upwardly and a compression cylinder associated with said housing in communication with the portion thereof above said ram to receive and compress air within said compression cylinder during upward movement of said ram, the improvement comprising an enclosed air chamber defined cooperatively by said housing and said anvil with at least a portion of said enclosed chamber disposed beneath a portion of said anvil, and conduit means providing direct fluid communication between said compression cylinder and said enclosed chamber for admitting said compressed air from said compression cylinder to said enclosed chamber whenever the pressure in said compression cylinder is greater than the pressure in said enclosed chamber

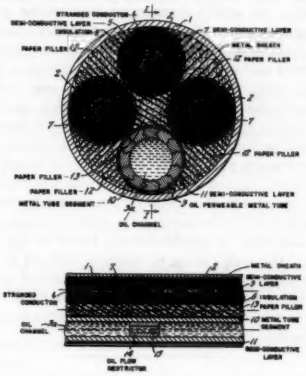


to impose an upwardly directed force on said anvil during upward movement of said ram.

4,523,648
SHEATHED, MULTI-CORE, OIL FILLED, ELECTRIC CABLE WITH OIL DUCT EXTERIOR TO THE CORES

Francesco Strada, Scaldasole, and Giuseppe Bazzi, Milan, both of Italy, assignors to Societa Cavi Pirelli S.p.A., Milan, Italy

Filed Feb. 9, 1984, Ser. No. 578,411
Claims priority, application Italy, Feb. 14, 1983, 19572 A/83
Int. Cl.³ H01B 9/06
U.S. Cl. 174—26 R 10 Claims



1. A multi-core, oil-filled, electric cable comprising:

a tubular metal sheath;

a plurality of cores arranged in side-by-side relation within said sheath with the outer surfaces of said cores contacting the inner surface of said sheath and with the outer surface of each core contacting the outer surface of at least one adjacent core, each said core comprising a conductor covered by insulation impregnated with and permeable to an insulating oil; and

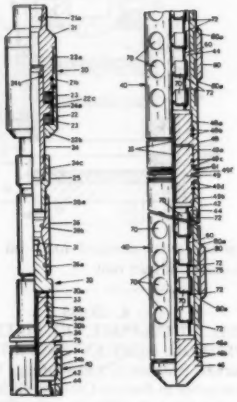
a tubular body within said sheath and contacting the inner surface of said sheath and the outer surfaces of at least two of said cores, said body having an inner, longitudinally extending, oil conduit and being oil permeable to permit oil to flow from said conduit to said insulation and vice-versa and said body having an outer diameter of the same order in size as the outer diameter of one of said cores and having a resistance to radial deformation at least equal to the resistance of said sheath to radial deformation.

4,523,649

ROTATIONAL ALIGNMENT METHOD AND APPARATUS FOR TUBING CONVEYED PERFORATING GUNS

Gregg W. Stout, Montgomery, Tex., assignor to Baker Oil Tools, Inc., Orange, Calif.

Filed May 25, 1983, Ser. No. 497,834
Int. Cl.³ E21B *43/118*
U.S. Cl. 175—4.51 **2 Claims**



1. Well perforating apparatus for use with a tubular conduit extending from the well head to a point above the casing zone to be perforated, said conduit being capable of carrying fluid, comprising: an axially concentric perforating gun assembly including a plurality of angularly and axially spaced explosive charge containers; the angular spacing of said containers being 120 degrees and said containers being aligned in three axially extending rows; a swivel unit connecting said perforating gun assembly to the end of the tubular conduit, said swivel unit comprising an annular thrust bearing thereby permitting rotation of said perforating assembly relative to the conduit; and an axially extending narrow rib on the exterior of said perforating gun assembly aligned with and overlying a portion of one said row of containers, the containers overlaid by said rib being blank, which shifts the center of gravity to cause said perforating gun assembly to gravitationally rotate in any non-vertical section of the well casing to position said rib in engagement with the upper wall portion of the non-vertical casing section; said rib being angularly positioned relative to all the explosive charge containers so that no explosive charge is directed vertically upward.

4,523,650

EXPLOSIVE SAFE/ARM SYSTEM FOR OIL WELL PERFORATING GUNS

Steven D. Sehnert, Houston; Gerald B. McClure, Sugarland, and William A. McPhee, Houston, all of Tex., assignors to Dresser Industries, Inc., Dallas, Tex.

Filed Dec. 12, 1983, Ser. No. 560,677
Int. Cl.³ E21B *43/116*
U.S. Cl. 175—4.56 **11 Claims**

1. A perforating apparatus for use in completing a subsurface well, comprising:

an elongated tubular housing member;

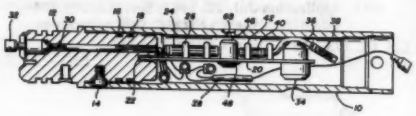
an elongated carrier strip retained within said housing member;

at least one shaped charge unit mounted on said carrier strip, said shaped charge having the axis of perforation directed generally laterally from said carrier strip;

a length of detonator cord having one end thereof mounted on said carrier strip and a portion thereof proximate the dorsal portion of said shaped charge;

an electrical blasting ccap mounted on said carrier strip; and

means rotatably mounted on said carrier strip intermediate said blasting cap and said one end of said detonator cord



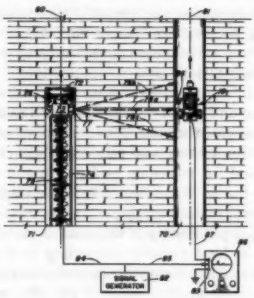
for selectively blocking an explosive detonation wave from said blasting cap to said one end of said detonator cord when rotated to a first position and passing said explosive detonation wave when rotated to a second position.

4,523,651

COAL AUGER GUIDANCE SYSTEM

Julian B. Coon, and Bobby J. Thomas, both of Ponca City, Okla., assignors to Conoco Inc., Ponca City, Okla.

Filed Dec. 17, 1979, Ser. No. 104,627
Int. Cl.³ E21B *47/12*; E21C *35/08*
U.S. Cl. 175—45 **9 Claims**



1. A method for forming the axis of a borehole substantially parallel to the axis of a borehole that has already been formed comprising:

a. inserting a seismic signal generating source into one of said boreholes at a location along its axis;

b. inserting into said remaining borehole a seismic signal detecting means connected to a signal observation means;

c. spacing said detecting means away from said borehole wall so that said detecting means receives only the air wave position of said generated seismic signal;

d. operating said seismic signal source to generate a seismic signal in said borehole; and

e. positioning said detecting means opposite said seismic signal generating source by observance of the seismic wave received by said detecting means;

whereby the thickness of the material between said seismic signal source and said detector can be calculated.

4,523,652

DRAINHOLE DRILLING ASSEMBLY AND METHOD

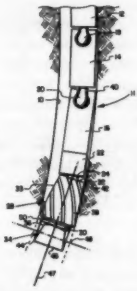
Frank J. Schuh, Dallas, Tex., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Filed Jul. 1, 1983, Ser. No. 510,013
Int. Cl.³ E21B *7/08*
U.S. Cl. 175—61 **5 Claims**

1. A bottom-hole assembly for drilling a curved borehole in the earth from a main bore comprising in combination:

(a) a drill bit;

(b) a generally cone-shaped reamer in fixed concentric following relation to said drill bit, said reamer having a cylindrical sidewall terminating forwardly in a perimetric cutting edge from which said sidewall tapers smoothly in a rearward direction to substantially the rearward end of said reamer along a curved path which matches the desired curvature of said borehole; and



(c) a knuckle joint for interconnecting said rearward end of said reamer in torque-transmitting relation with a flexible drill shaft, whereby when an axial load is applied to said drilling shaft said tapered reamer sidewall maintains continuous stabilizing contact with the outside of said borehole.

4,523,653

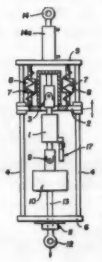
LOAD CELL MASS COMPARATOR

Thomas F. Scrivener, Hagerstown, and Randall M. Schoonover, Monrovia, both of Md., assignors to Frazier Precision Instrument Company, Inc., Gaithersburg and Holometrics, Inc., Derwood, both of, Md.

Filed Mar. 8, 1984, Ser. No. 587,532

Int. Cl.³ G01G *3/14, 19/14, 21/10*

U.S. Cl. 177—147 **11 Claims**



1. A load cell mass comparator comprising a fixed upper plate and a fixed lower plate, a plurality of guide rods extending between said plates, a floating plate slidably mounted on said rods, spring means connected between said upper fixed plate and said floating plate, a load cell positioned below said floating plate, first self-aligning coupling means connecting the upper end of said load cell to said floating plate, second self-aligning coupling means connected to the lower end of said load cell, thrust bearing means connected to said second self-aligning coupling means, a stem connected to said thrust bearing means, said stem extending through said fixed lower plate and adapted to be connected to the mass to be calibrated, whereby the first and second self-aligning coupling means maintain the load cell in axial alignment with the mass being calibrated, and the thrust bearing means prevents any revolving torque from being transmitted to the load cell from said mass.

4,523,654

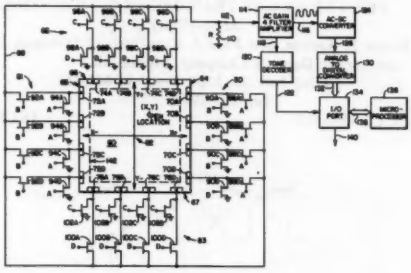
ELECTROGRAPHIC SYSTEM

Stanley F. Quayle, and Philip A. Schlosser, both of Columbus, Ohio, assignors to Scriptel Corporation, Hilliard, Ohio

Filed Sep. 14, 1983, Ser. No. 532,191

Int. Cl.³ G08C *21/00*

U.S. Cl. 178—19 **16 Claims**



12. An electrographic system comprising:

an electrically insulative substrate;

a resistive layer exhibiting substantially uniform electrical resistance supported upon said insulative substrate and having an operational region extending in a x-coordinate sense between first and second parallel, spaced-apart border regions, and extending in a y-coordinate sense between third and fourth parallel, spaced-apart border regions;

cursor means including an electrically conductive transparent disk having a cross hair indicia formed thereon positionable adjacent said resistive layer;

means for exciting said cursor means from an a.c. source to generate localized electromagnetic radiation from said disk to effect an interaction with said resistive layer;

a plurality of first, discrete, spaced-apart contacts electrically coupled with said resistive layer at said first border region;

a plurality of second, discrete, spaced-apart contacts electrically coupled with said resistive layer at said second border region;

a plurality of third, discrete, spaced-apart contacts electrically coupled with said resistive layer at said third border region;

a plurality of fourth, discrete, spaced-apart contacts electrically coupled with said resistive layer at said fourth border region;

signal treating means having an input for selectively receiving electrical signals generated by said cursor means interaction and present at said first and second contacts to derive output signals corresponding therewith, and selectively receiving said electrical signals present at said third and fourth contacts to derive output signals corresponding therewith;

solid state switching means for coupling said first contacts in signal transferring relationship with said signal treating means input while effecting a mutual, open circuit isolation of said third and fourth contacts, for coupling said second contacts in signal transferring relationship with said signal treating means input while effecting a mutual, open circuit isolation of said third and fourth contacts, for coupling said third contacts in signal transferring relationship with said signal treating means input while effecting a mutual, open circuit isolation of said first and second contacts, and for coupling said fourth contacts in signal

transferring relationship with said signal treating means input while effecting a mutual, open circuit isolation of said first and second contacts; and

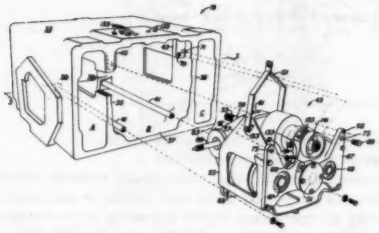
control means responsive to said output signals for deriving x-coordinate signals corresponding with the x-coordinate location of said interaction and y-coordinate signals corresponding with the y-coordinate location of said interaction.

4,523,655

VEHICLE FRAME TRANSMISSION MOUNTING ASSEMBLY

Thomas F. Keenan, and John J. Kass, both of Dubuque, Iowa, assignors to Deere & Company, Moline, Ill.

Filed Nov. 26, 1982, Ser. No. 444,922
Int. Cl.³ B60K *17/00*
U.S. Cl. 180—9.1 **16 Claims**



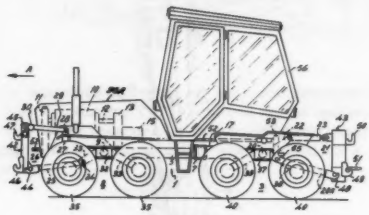
8. A frame for a crawler tractor, comprising: a front section adapted to contain a radiator, an engine, and a rear section adapted to support an operator's compartment and contains a steering drive mechanism forward of a low profile power shift transmission, said rear section including a forward wall, a top and bottom walls, and opposing sidewalls, a plurality of first mounting members fixably mounted to said bottom wall in close proximity to said forward wall in said housing, a plurality of guide rods, each of said guide rods fixably mounted to a respective one of said mounting members, a plurality of second mounting members fixably mounted to said top wall in said housing rearwardly of said first mounting members, at least one of said second mounting members having a guide pin extending rearwardly, said low profile transmission including a casing having a forward wall, rear wall and a plurality of sidewalls, an input shaft extending through said forward wall into said casing and rotatably mounted in said forward and rear wall, an output shaft extending through said forward wall into said casing and rotatably mounted in said forward and rear-walls, gear reducing means for communicating said input shaft to said output shaft, said gear reducing means being contained in said casing, said gear reducing means to have a low profiled configuration, said forward wall of said transmission casing having a lower portion extending below said casing, said lower porton of said forward wall having a plurality of apertures therein through which a respective one of said rods extend, said forward wall being slidably mounted on said rods, said rear wall of said transmission casing having an upper portion extending above said casing, said upper portion of said rear wall being fixably and detachably mounted to said second mounting members, said rear wall portion having apertures to receive said guide pin and having a plurality of ports to receive hydraulic fluid for selective activation and lubrication of said gear reducing means; said guide rods being tapered to assume mating fit in said bore of said forward wall of said casing; means for delivering hydraulic fluid to said ports in said transmission's rear wall ports.

4,523,656

TRACTOR FOR AGRICULTURAL PURPOSES

Cornelis van der Lely, 7 Brüschenrain, Zug, Switzerland

Filed Feb. 22, 1983, Ser. No. 468,382
Claims priority, application Netherlands, Feb. 19, 1982, 8200663
Int. Cl.³ B62D *61/10*
U.S. Cl. 180—24 **34 Claims**



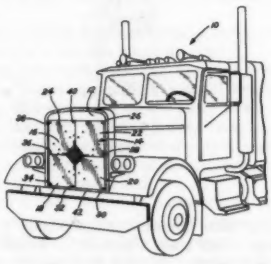
1. A tractor for agricultural purposes particularly for seed-bed preparation, comprising an engine with a power of at least thirty kilowatts, a frame, eight wheels at least two of which are power driven wheels, at least one lifting device and at least one power take-off shaft, characterized in that the weight of the tractor is about forty kilograms per kilowatt engine power, the engine power being directly transferable to the power take-off shaft of the tractor, and the power output of said engine being so arranged to provide the lifting device at its coupling points with a lifting power of at least one thousand kilograms, and a cabin for the tractor's operator which has a width substantially equal to the overall width of the tractor and a horizontal length which is about one-half the overall length of the tractor and is above at least two of said wheels other than the forward or rear wheels of said wheels.

4,523,657

WINTERFRONT WITH ADJUSTABLE CENTER OPENING

Thomas A. Kooyumjian, Cook County, Ill., assignor to Belmor Manufacturing Company, Chicago, Ill.

Filed Apr. 26, 1982, Ser. No. 372,082
Int. Cl.³ F28F *13/06;* **B60K** *11/08*
U.S. Cl. 180—68.1 **4 Claims**



1. An improved winterfront of the type that is utilized to restrict the flow of ram air through an air passage on a moving truck having a cab with a single engine fan with a fan axle and fan blades extending radially outwardly from the fan axle, said fan axle being substantially parallel to the direction of the flow of ram air through the air passage during forward motion of the truck, said winterfront having a ram-air-blocking portion and means for removably attaching said ram-air-blocking portion to the truck to reduce the flow of air through the air passage, the improvement comprising:

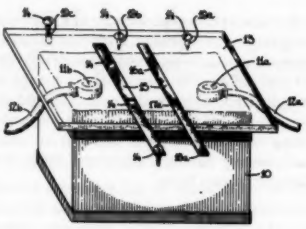
a ram-air-blocking portion having at least a first foldable fabric portion, a second foldable fabric portion, a third foldable fabric portion, a fourth foldable fabric portion, and a center opening with a center point and a periphery formed by said first, second, third, and fourth foldable fabric portions, said periphery being symmetrical about the center point of the center opening, each of said foldable fabric portions having at least first, second, and third sides, means for connecting said first side of each foldable fabric portion to the second side of another foldable fabric portion, and means for connecting said second side of each foldable fabric portion to the first side of another foldable fabric portion, said second side of said first foldable fabric portion abutting the first side of said second foldable fabric portion, said second side of said second foldable fabric portion abutting the first side of said third foldable fabric portion, said second side of said third foldable fabric portion abutting the first side of said fourth foldable fabric portion, said second side of said fourth foldable fabric portion abutting the first side of said first foldable fabric portion, each of said foldable fabric portions being foldable into first and second folded sections and having means for connecting said first folded section to said second folded section so that the size of said center opening can be increased or decreased while remaining symmetrical about the center of the center opening whereby the center point is aligned with the axis of rotation of the fan axle when the ram-air-blocking portion is attached to the truck to reduce the flow of air through the air passage on the truck.

4,523,658

BATTERY SHIELD

Ray Maki, c/o Mrs. Don Henderson, 10649 Longrifle Rd., Boise, Id. 83709

Filed May 9, 1983, Ser. No. 493,022
Int. Cl.³ B62D *25/00*
U.S. Cl. 180—68.5 **4 Claims**



1. A battery shield and vehicle containing the battery to be shielded composed of in combination;

a vehicle containing a battery;

a rectangular shield means 2 inches or larger than the battery to be shielded, containing a first set of at least three holes evenly spaced along one long end;

two bracket means to assist attaching the shield means to the vehicle thus shielding the battery, said bracket means including a second set of holes, one hole within one inch of the end of the bracket means, the other two holes evenly spaced along the bracket means, said other holes matching up with a third set of holes in shield means; and

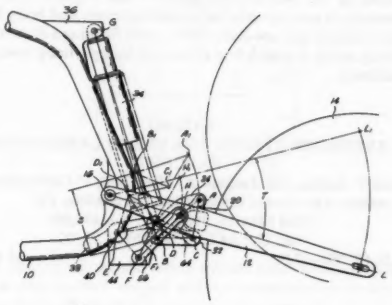
at least six $\frac{3}{4}$"×#10 screws for use in attaching the shield means and bracket means to each other and to the vehicle.

4,523,659

REAR SUSPENSION FOR A MOTORCYCLE

Kazuhiro Yamamoto, Saitama, and Tokio Isono, Tokyo, both of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed May 24, 1983, Ser. No. 497,652
Claims priority, application Japan, Jun. 7, 1982, 57-97315
Int. Cl.³ B62K *25/04*
U.S. Cl. 180—227 **13 Claims**



1. A rear suspension for a motorcycle having a body frame, a rear wheel support frame pivotally mounted to the body frame, and a cushion member fixed at a first end to the body frame, comprising

swing arm support linkage including a first arm and a first rod pivotally connected one to the other, said swing arm support linkage being pivotally connected to the body frame and pivotally connected to the rear wheel support frame;

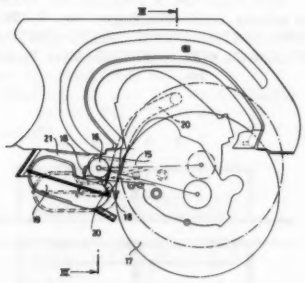
cushion linkage including a second arm and a second rod pivotally connected one to the other, said cushion linkage being pivotally connected to said first arm and pivotally connected to one of the body frame and the rear wheel support frame, the cushion member being fixed at a second end of said cushion member to said second arm.

4,523,660

BEARING BODY FOR MOTORCYCLE

Bruno Gaddi, Pisa, Italy, assignor to Piaggio & C. S.p.A., Genoa, Italy

Filed Dec. 3, 1982, Ser. No. 446,617
Claims priority, application Italy, Dec. 9, 1981, 23724/81[U]
Int. Cl.³ B62K *25/02*
U.S. Cl. 180—228 **2 Claims**



1. In a motorcycle: a support body having a longitudinal median plane; an oscillating arm fulcrummed to said body for pivoting movement about an axis transverse to said longitudinal median plane, said arm extending rearwardly of said pivot

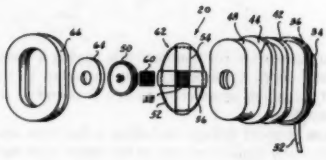
axis; an engine/transmission assembly carried by said arm at a location rearwardly of said pivot axis and laterally of said longitudinal median plane; a rear wheel drivingly connected to said engine/transmission assembly and located generally in said longitudinal median plane; an exhaust silencer carried by said engine/transmission assembly so as to oscillate therewith, said silencer being located generally in said longitudinal plane and forward of said rear wheel and at least partially forward of said pivot axis whereby the lateral space adjacent said rear wheel on the side thereof opposite said engine/transmission assembly is not encumbered by said silencer, said body having downwardly and inwardly facing walls forming a downwardly facing cavity in which said silencer at least partially resides and oscillates.

4,523,661

EARPHONE SYSTEM FOR USE IN LARGE-CAVITY EARCUPS

John P. Scalzo, and Jackson A. Aileo, both of Carbondale, Pa., assignors to Gentex Corporation, Carbondale, Pa.

Filed May 16, 1983, Ser. No. 494,802
Int. Cl.³ A42B *3/00*; H04R *25/00*
U.S. Cl. 181—129 **5 Claims**



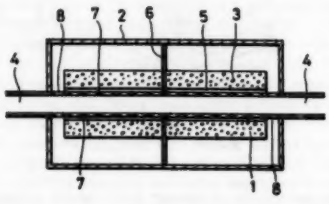
1. An earcup assembly including in combination an earcup of relatively rigid material forming a cavity for receiving the ear of a wearer, an earphone receivable in said cavity, and means for resiliently biasing said earphone outwardly of said cavity into engagement with the ear of the wearer, said biasing means comprising an elastic strap suspended across the opening of said cavity and means for securing said earphone to said strap.

4,523,662

MUFFLER FOR EXHAUST GAS FROM AN INTERNAL COMBUSTION ENGINE

Hideharu Tanaka; Mutsuo Sekiya, both of Hyogo, and Fusaoki Uchikawa, Kanagawa, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

PCT No. PCT/JP82/00429, § 371 Date Jul. 5, 1983, § 102(e) Date Jul. 5, 1983, PCT Pub. No. WO83/01653, PCT Pub. Date May 11, 1983
PCT Filed Nov. 5, 1982, Ser. No. 531,894
Claims priority, application Japan, Nov. 5, 1981, 56-178570; Nov. 5, 1981, 56-178571; Nov. 5, 1981, 56-178572; Nov. 5, 1981, 56-178573; Jan. 29, 1982, 57-12863[U]; May 28, 1982, 57-91625
Int. Cl.³ F01N *1/10*
U.S. Cl. 181—249 **14 Claims**



1. A muffler for the exhaust gas of an internal combustion engine, comprising:

a casing,

a perforated sleeve disposed in said casing, said perforated sleeve having an interior through which the exhaust gas flows and a wall having a plurality of openings,

a cylindrical porous sound-absorbing body arranged coaxially with said perforated sleeve on an outer periphery of said perforated sleeve,

a cylindrical thin film made of metal, said cylindrical thin film being intimately interposed between said perforated sleeve said cylindrical porous sound-absorbing body,

a space defined between an inner periphery of said casing and an outer periphery of said cylindrical porous sound-absorbing body, and

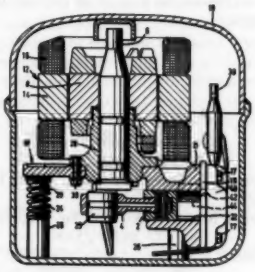
at least one communication passage means for providing a pressure balancing communication between the interior of said perforated sleeve and said space.

4,523,663

SILENCER OF THE RESONANCE ABSORPTION TYPE IN MOTORCOMPRESSOR FOR REFRIGERATORS

Alfredo Bar, Pavia, Italy, assignor to Necchi S.p.A., Pavia, Italy

Filed Apr. 12, 1983, Ser. No. 484,287
Claims priority, application Italy, Apr. 15, 1982, 42904 A/82
Int. Cl.³ F04B *21/08, 39/12*
U.S. Cl. 181—403 **1 Claim**



1. Resonance absorption type silencer in a motorcompressor unit for refrigerators, comprising a cylindrical block of said motorcompressor unit defining a blind cylindrical bore, a valve plate of said unit defining an opening therethrough and fitting against said cylindrical block and a cylinder head of said unit fitting against said valve plate and defining a chamber therein communicating with the interior of said unit and said bore and opening, said opening having a transverse dimension smaller than the diameter of said bore.

4,523,664

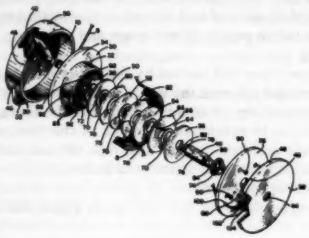
SAFETY DESCENT DEVICE

Garry V. Soubry, 6150 W. Cheyenne, Las Vegas, Nev. 89108, and James L. MacFarlane, 5848 Sinaloa Ct., Las Vegas, Nev. 89103

Continuation-in-part of Ser. No. 500,977, Jun. 8, 1983, Pat. No. 4,480,716. This application Apr. 2, 1984, Ser. No. 596,019
Int. Cl.³ A62B *1/12, 1/16*
U.S. Cl. 182—233 **14 Claims**

1. A portable descent device comprising a casing, a spool having a hollow interior rotatably mounted in the casing, a cable wound around the spool and having a portion thereof extending exteriorly of the casing through an aperture therein, a shaft extending axially through said spool, a sealed chamber

interior of the spool containing a viscous liquid, at least one non-rotatable disk extending radially from the shaft within said



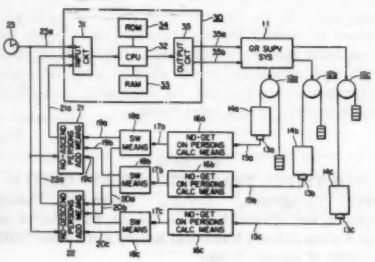
chamber, and a plurality of rotatable flat discs mounted parallel to and spaced from the non-rotatable discs.

4,523,665

CONTROL APPARATUS FOR ELEVATORS

Shintaro Tsuji, Nagoya, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Japan

Filed Dec. 13, 1983, Ser. No. 560,949
Claims priority, application Japan, Dec. 18, 1982, 57-222557
Int. Cl.³ B66B *1/20*
U.S. Cl. 187—29 R **9 Claims**



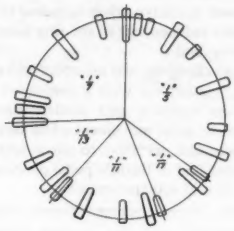
1. A control apparatus for elevators wherein a plurality of previous cycles and a present cycle of a fluctuating demand and/or service condition value are divided into a plurality of corresponding sections, wherein a first value indicative of an estimated demand and/or service condition value in at least one section of the present cycle is provided, said first value being estimated from the measured demand and/or service condition value of cycles previous to the present cycle, and wherein a second value indicative of a measured demand and-/or service condition value in the one section of the present cycle is generated, said control apparatus comprising decision means for comparing the first value to the second value and determining if a reference condition is satisfied, means for supplying as an output the first value if the reference condition is satisfied and a third value different from the first value if the reference condition is not satisfied, said third value being provided by said control apparatus, and means for controlling the elevator cages in accordance with the output.

4,523,666

BRAKE ROTOR WITH VIBRATION HARMONIC SUPPRESSION, AND METHOD OF MANUFACTURE

Scott L. Murray, Lansing, Mich., assignor to Motor Wheel Corporation, Lansing, Mich.

Filed Aug. 3, 1983, Ser. No. 520,064
Int. Cl.³ F16D *65/10*
U.S. Cl. 188—218 XL **51 Claims**



1. A method of manufacturing a brake rotor which includes at least one braking surface and a circumferential array of cooling fins, said method comprising the steps of:

(a) selecting a total number of fin cycles in said array, each said fin cycle consisting of a fin and a space between the said fin and the next-adjacent fin in said array,

(b) dividing said array into a plurality of unequal nominal fractional angular segments,

(c) arranging said nominal fractional angular segments in a predetermined sequence around said array,

(d) selecting the number of fin cycles in each said segment as a function of said total number of fin cycles multiplied by the ratio of the corresponding said nominal fractional segment to the numerical sum of said nominal fractional segments, and

(e) selecting the angular dimension of each said fin cycle within each said segment as a predetermined function of sequence of fin cycles within the corresponding said segment.

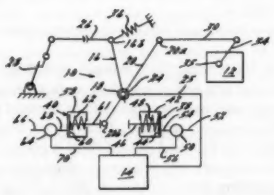
49. In a brake rotor comprising annular brake surface means and a plurality of cooling fins disposed at preselected fin positions in a circumferential array around said rotor and coupled for heat dissipation to said means, the improvement for reducing harmonic vibration of said rotor wherein the said cooling fins at alternate ones of said positions are of progressively reduced radial dimension as compared with the remainder of said fins, which are of equal length, as a substantially exponential function of angle around said array.

4,523,667

THROTTLE MODULATION MECHANISM

Robert R. Smyth, Bloomfield Hills, Mich., assignor to Eaton Corporation, Cleveland, Ohio

Filed Dec. 27, 1982, Ser. No. 453,544
Int. Cl.³ F16D *23/00, 47/00*
U.S. Cl. 192—0.092 **18 Claims**



1. A mechanism adapted to be interposed between an engine

throttle pedal and an engine fuel control device for varying fuel delivery to an engine during shifting modes of a transmission driven by the engine, the mechanism comprising:

a first member mounted for pivotal movement about an axis and adapted for slaved movement with the throttle pedal;

a second member mounted for pivotal movement relative to said first member, substantially about said axis, and adapted to be connected with the fuel control device for slaved movement therewith;

actuator means operative when actuated to move said second member independent of the first member to vary the fuel delivery; and

resilient means clamping said members into a predetermined positional relationship with a preloaded, resilient force operative to maintain said predetermined relationship during throttle pedal movement while said actuator means is unactuated and operative to allow said relative movement independent of throttle pedal position in response to actuation of said actuator means.

4,523,668
POWER CONTROLLING APPARATUS USING FRICTION MATERIAL

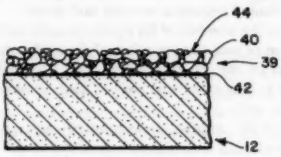
Takao Uematsu; Yoshiharu Honma; Seikichi Tanno; Ran Ito, all of Hitachi; Jun Matsubayashi, Ibaraki, and Tomio Yoshida, Takahagi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Aug. 4, 1982, Ser. No. 405,284

Claims priority, application Japan, Aug. 10, 1981, 56-124065

Int. Cl.³ F16D *69/02, 13/74*

U.S. Cl. 192—107 M **18 Claims**



1. In a power controlling apparatus comprising means for transferring energy by applying friction and using a friction material, the improvement comprising using as said friction material a molded cork, a friction surface of which has a lubricant layer comprising predetermined proportions of a solid lubricant having a larger average particle size and a solid lubricant having a smaller average particle size and filling vacant spaces between the larger-sized solid lubricant in dense form.

4,523,669
RETRACTABLE CONVEYOR BELT

Donald L. Smith, 14865 - 103 Ave., Surrey, British Columbia, Canada V3R 1L4

Filed Apr. 7, 1982, Ser. No. 366,145

Claims priority, application Canada, Apr. 9, 1981, 375148

Int. Cl.³ B65G *15/26*

U.S. Cl. 198—313 **16 Claims**

1. A telescopic boom and conveyor apparatus having a base component;

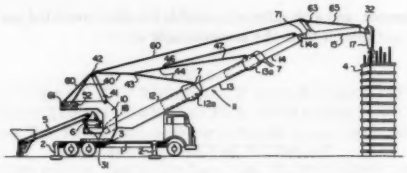
a main boom comprising first, second, and third telescopic boom sections, one end of said first section being pivotally connected to said base component for vertical movement relative thereto, an articulated boom section pivotally connected to the free end of said third section, and articulated boom support and telescopic displacement control means, extending from a position above the pivotal connection of said base with said first section to said articulated boom, for maintaining said articulated boom at a predetermined angle during telescopic displacement of said main boom;

cable means for causing telescopic displacement of said third section within said second section, uniformly with telescopic displacement of said second section within said first section between points of minimum and maximum boom extension;

an endless conveyor belt carried by the upper surface of said main boom and wherein the upper run of said belt extends from proximate the pivotal connection of the first section with the base, to at least the free end of the third section and wherein said belt overlies said first, second, and third boom sections, and said articulated boom;

means for driving said belt;

means for supporting said belt during its upper and return runs;



fixed belt take-up means on said first, second, and third boom sections co-operating with the return run of the belt for accomodating excess length in the return run of the belt at any given boom extension position;

main boom support and telescopic displacement control means, extending from a point on said base component above its pivotal connection with said main boom to at least each of the ends of said first, second and third sections remote from said base, for maintaining said boom at a predetermined angle during telescopic displacement of said main boom;

first hoist means on said base component, co-operating with said main boom support and telescopic displacement means, for raising and lowering said main boom; and

second hoist means on said base component, co-operating with said articulated boom support and telescopic displacement control means, for angulating said articulated boom relative to said main boom.

4,523,670
WORKPIECE TRANSFERRING APPARATUS

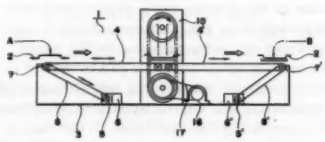
Taminori Yanagisawa, Toyota; Takaharu Yamaguchi, Toyokawa, and Hiroshi Fukatsu, Toyota, all of Japan, assignors to Toyota Jidosha Kabushiki Kaisha and Taihoo Seiki Co., Ltd., both of Toyota, Japan

Filed Feb. 24, 1983, Ser. No. 469,512

Claims priority, application Japan, Mar. 5, 1982, 57-030342[U]

Int. Cl.³ B65G *47/24*

U.S. Cl. 198—403 **11 Claims**



1. An apparatus for transferring a workpiece from a first conveyor device leading from one manufacturing stage to a second conveyor leading to another manufacturing stage, the apparatus comprising:

a frame having a first axis;

an elongated slide guide fixed to the frame;

a slider mounted in the slide guide for reciprocal movement parallel to said first axis between a first position and a second position spaced from the first position;

a sprocket wheel rotatably mounted in the frame;

a chain guide having a semicircular portion centered on a second axis perpendicularly intersecting the first axis at said second position;

an endless chain trained around the sprocket wheel and the semicircular portion of the chain guide, the chain extending in a path including first and second rectilinear portions between the sprocket wheel and the chain guide, the rectilinear portions being connected by a semicircular portion conforming to the semicircular portion of the chain guide;

a reversible drive device connected to the sprocket wheel for rotating the sprocket wheel selectively in one of a forward direction and a reverse direction;

a workpiece retaining arm having a base end and an outer end, the base end being pivotally connected to the slider for rotation about a third axis perpendicular to the first axis and parallel to the second axis;

means for connecting the workpiece retaining arm to the endless chain such that movement of the chain in the forward direction causes the retaining arm connecting means to follow the first rectilinear portion of the chain path and to move the slider from said first position to said second position, continued movement of the chain in the forward direction causes the retaining arm connecting means to follow the semicircular portion of the chain path and the workpiece retaining arm to pivot 180 degrees about said third axis, and still further movement of the chain in the forward direction causes the retaining arm connecting means to follow the second rectilinear portion of the chain path and the slider to return from said second position to said first position;

a workpiece clamping device connected to the workpiece retaining arm for clamping a workpiece and for inverting said workpiece when the retaining arm is pivoted 180 degrees;

means for actuating said workpiece clamping device for selectively clamping and unclamping a workpiece when the slider is at said first position;

first means for switching the reversible drive device to the forward direction when the slider is at said first position and the connecting means for the workpiece retaining arm is located on the first rectilinear portion of the chain path; and

second means for switching the reversible drive device to the reverse direction when the slider is at said first position and the connecting means for the workpiece retaining arm is located on the second rectilinear portion of the chain path.

4,523,671

APPARATUS FOR MULTIPLE LANE STACKING

James F. Campbell, Green Bay, Wis., assignor to Paper Converting Machine Company, Green Bay, Wis.

Filed Jun. 21, 1983, Ser. No. 506,508

Int. Cl.³ B65G *57/09*

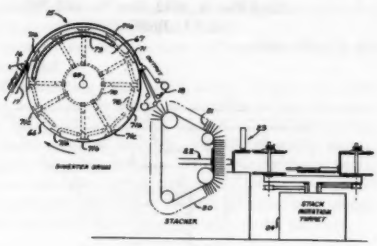
U.S. Cl. 198—422 **9 Claims**

1. An apparatus for diverting serially fed product from an input path to a plurality of output paths, said apparatus comprising:

a wheel mounted for rotation about an axis which is generally perpendicular to said input path and said output paths;

a plurality of product control means on the wheel for moving product from said input path to said output paths, at least some of said product control means being movably mounted on said wheel for transverse movement perpendicular to product flow while the path of movement of said product control means generates a portion of a cylinder;

a stationary barrel cam for moving said movable product control means transversely while said movable product control means is being moved in a curved path from said input to said output positions, the barrel cam being provided with a plurality of grooves; and



a cam follower attached to each of the movable product control means, each of said cam followers being positioned in one of said grooves of the barrel cam whereby the cam followers are moved by the grooves of the barrel cam as the wheel rotates with respect to the barrel cam.

4,523,672

METHOD FOR THE TRANSVERSE CONVEYING OF STRAND SECTIONS OF A MULTI-STRAND CONTINUOUS CASTING INSTALLATION AND TRANSVERSE CONVEYING APPARATUS FOR A MULTI-STRAND CASTING INSTALLATION

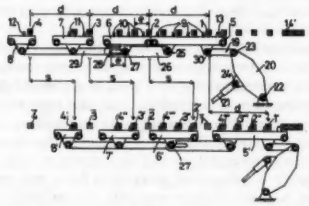
Carlos R. Navarro, Barcelona, Spain, assignor to Concast AG, Zurich, Switzerland

Filed Jun. 21, 1982, Ser. No. 390,390

Claims priority, application Switzerland, Jun. 30, 1981, 4283/81

Int. Cl.³ B65G *47/31*

U.S. Cl. 198—461 **16 Claims**



1. A method of transversely conveying strand sections especially billets, of a multi-strand continuous casting installation onto a neighboring cooling bed, comprising the steps of:

longitudinally outfeeding strand sections from the casting installation to a transverse conveying apparatus;

transversely conveying the strand sections by repeatedly advancing the strand sections located rearward of a last outfeed line, viewed in the transverse conveying direction, substantially at a right angle to the direction of longitudinal feed through a distance less than a lateral spacing of the strand sections in partial conveying displacement strokes starting from their starting position through one or a number of intermediate positions located between two neighboring outfeed lines; and

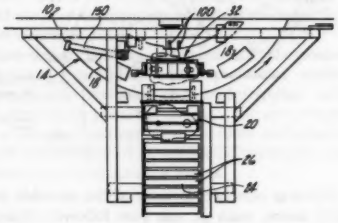
substantially simultaneously conveying at least said strand sections located in a penultimate outfeed line and rearwards thereof.

4,523,673

TRANSFER DEVICE

John R. Vessey, Linden; Chandrakant M. Patel, Flint, and Jack Armstrong, Fenton, all of Mich., assignors to Excel Corporation, Fenton, Mich.

Filed Dec. 9, 1982, Ser. No. 448,260
Int. Cl.³ B65G *25/00*
U.S. Cl. 198—486 **9 Claims**



1. A device for transferring workpieces from an entry station and to a predetermined position on a moving conveyor comprising:

a housing, at least a portion of said conveyor extending through said housing and movable along a predetermined path of movement,

a carriage assembly,

means for slidably mounting said carriage assembly to said housing along at least a portion of said path of movement so that said carriage assembly is movable from a first position, in which said carriage assembly is aligned with said entry station, and a second position spaced away from said first position along said path of movement,

said carriage assembly comprising:

means for receiving and holding a workpiece from said entry station when said carriage assembly is in said first position,

means actuatable after receipt of a workpiece by the carriage assembly for coupling said carriage assembly to a predetermined position of said conveyor so that said carriage assembly moves in unison with said conveyor from said first position and towards said second position,

means for releasing said workpiece onto said conveyor when said carriage assembly is in said second position,

means for deactuating said coupling means following the release of said workpiece onto said conveyor,

means actuatable following said uncoupling of said carriage assembly from said conveyor for returning said carriage assembly to said first position, and

means for loading said workpiece from said entry station and to said carriage assembly comprising a pusher assembly and means for moving said pusher assembly between a retracted position and an extended position wherein in said retracted position said pusher assembly engages a workpiece in said entry station, wherein in said extended position, said pusher assembly moves said workpiece into said holding and receiving means.

4,523,674

IMPACT ROLLER STRUCTURE

Gary Haugen, and Everett Amundson, both of Minot, N. Dak., assignors to Impact Roller, Inc., Minot, N. Dak.

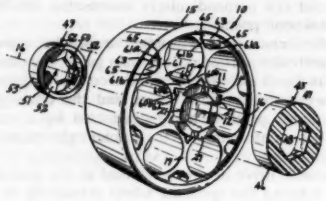
Filed Jun. 17, 1982, Ser. No. 389,161
Int. Cl.³ B65G *39/06*
U.S. Cl. 198—843 **23 Claims**

1. An impact roller, comprising:

(a) hub means having an opening therein;

(b) outer ring-like means interconnected with said hub means; and

(c) means for absorbing shock due to impact on said impact roller, said means including a plurality of radially extending members positioned between said hub means and said ring-like means, said means being constructed and arranged to absorb shock imparted on said impact roller,



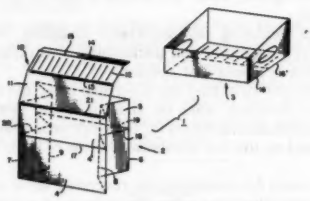
said members comprising double concave walls, each of said walls including a fork-like structure at its radially inner end and at its radially outer end, said roller being constructed of polyurethane having a durometer in the range of 80A to 70D.

4,523,675

COLLAPSIBLE DISPLAY STAND WITH ATTACHED TRAY

Stefan Schröter, Neutraubling, Fed. Rep. of Germany, assignor to Schroter + Bake GmbH & Co., KG, Neutraubling, Fed. Rep. of Germany

Filed Dec. 21, 1981, Ser. No. 332,931
Claims priority, application Fed. Rep. of Germany, Dec. 19, 1980, 8033787[U]; Nov. 26, 1981, 8134499[U]
Int. Cl.³ B65D *5/52*
U.S. Cl. 206—44 R **3 Claims**

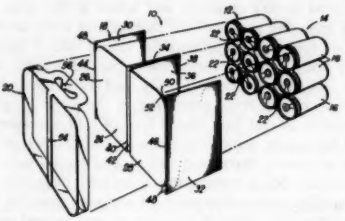


1. A display stand comprising a tray and a collapsible support stand adapted to support said tray, said display stand being movable between a first, erect position in which the support stand is substantially vertical and supports said tray and a second, collapsed position in which said support stand is folded about said tray, said tray having a generally rectangular base and a plurality of connected sidewalls extending generally upwardly from said base, said support stand having a front wall, a rear wall, an open top, and two side walls connecting said front and rear walls, each of said side walls having a vertical center fold line which is inwardly foldable, each of said front, rear and side walls of said support stand having a generally horizontal fold line, said support stand further comprising a first ceiling panel integrally hinged by a fold line to said front wall and extending generally upwardly from said front wall when said support stand is in its erect position, and a second ceiling panel which is connected to said first ceiling panel, the base of said tray being bonded to at least one of said ceiling panels, wherein when said display stand is in said second position, said vertical center fold lines are folded inwardly, said ceiling panels are positioned below the base of said tray, and said front and rear walls overlie the open top of said tray.

4,523,676
MULTI-CONTAINER PACKAGE WITH OPTIONAL COVER AND METHOD FOR MAKING THE SAME

Marshall J. Barrash, Atlanta, Ga., assignor to The Coca-Cola Company, Atlanta, Ga.

Filed Dec. 27, 1983, Ser. No. 565,793
Int. Cl.[3] B65D *85/62, 75/56, 71/02*
U.S. Cl. 206—150 12 Claims

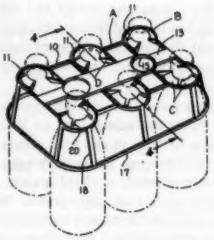


1. A multi-container package comprising:
(a) a plurality of preformed plural container assemblies;
(b) a cover over at least a portion of said multi-container package, said cover including a top panel and a pair of side panels on opposite ends of said top panel extending down from said top panel along opposite sides of said package, said top panel having a plurality of separated sections, each adjacent pair of said sections being interconnected by a pair of intermediate panels extending down into said package between a pair of adjacent ones of said assemblies; and
(c) a band encircling and securing together said plurality of assemblies and said cover, and being in contact with both of said side panels, said band including a stabilizing strap extending between each adjacent pair of said assemblies and also extending between each pair of intermediate panels.

4,523,677
BOTTLE HOLDER

Heiner J. Schürmann, Greenville, S.C., assignor to American Ka-ro Corporation, Greenville, S.C.

Filed Aug. 3, 1983, Ser. No. 519,815
Int. Cl.[3] B65D *71/00, 71/04*
U.S. Cl. 206—158 3 Claims

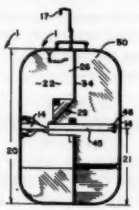


1. A unitary bottle holder constructed of molded synthetic polymeric material for retaining a number of bottles having necks in a package having a longitudinal central handle section to facilitate handling comprising:
a frame surrounding the necks of the bottles in the package extending about the handle section;
said frame having a plurality of spaced interconnected individual rib sections each extending outwardly from said handle section and thence being connected by an arcuate portion for receiving a neck portion of a bottle;
a plurality of segmental flexible lip members extending integrally from said rib sections along major portions thereof;
said flexible lip members extending upwardly and inwardly terminating to form an opening receiving the neck of a bottle in a resilient gripping action;
spaced inwardly converging slots defining said flexible lip members; and
a pair of upstanding converging wedge shaped ribs each carried integrally by marginal portions of said lip members tapering outwardly from said rib sections terminating in an inner edge of said lips defining inwardly facing, outwardly tapering openings of lesser width than a bottle neck each accommodating a neck of a bottle for removal when a respective neck is forced between said wedge shaped ribs for removal of a bottle from the package.

4,523,678
EXTERNAL COAT POCKET FOR LUGGAGE

Paul W. Fox, 8611 Belcrest, St. John, Mo. 63114

Filed Dec. 10, 1980, Ser. No. 215,012
Int. Cl.[3] A45C *3/00, 13/04*
U.S. Cl. 206—287.1 10 Claims



1. In a folding bag having a frame, and an enclosure supported by said frame, said enclosure including an inner side and an outer side, said enclosure defining a first article receiving area along the inner side thereof, said first article receiving means having attachment means therein, said bag having a length dimension longer in its unfolded condition than in its folded condition and greater than a width dimension of the bag, the improvement comprising an external coat accepting pocket along the outer side of said enclosure extending substantially the length of the bag, said coat accepting pocket including a cover piece interconnected with said bag so as to provide at least first expansion means at the juncture of said pocket with the outer side of said bag, said expansion means adapted to permit folding of said bag, and hook means mounted to said frame and having a portion extending through the outer side of said enclosure and positioned within said pocket for receiving garments, said coat accepting pocket being accessible by a user for insertion of articles therein in either the folded or unfolded condition of said bag.

4,523,679
PRE-STERILIZED MEDICAL PROCEDURE KIT PACKAGES

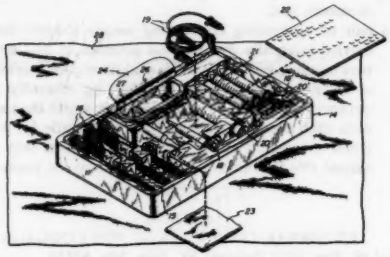
Myron Paikoff, Colonie, N.Y.; Robert W. Hain, Scotch Plains, and Frederick B. Hadtke, New Providence, both of N.J., assignors to Sterling Drug Inc., New York, N.Y.

Filed Mar. 5, 1984, Ser. No. 586,159
Int. Cl.[3] A61B *19/02;* B65D *1/34*
U.S. Cl. 206—370 8 Claims

1. A medical procedure package comprising in combination:
A. a sealed, pre-sterilized outer package wrap containing therein:
B. an essentially unitary, two-compartment kit wrapped

within an inner package wrap, the first of said compartments being relatively large and comprising:

(a) a medical procedure set-up tray and associated essential medical procedure components, said outer package wrap, set-up tray, essential medical procedure components and inner package wrap being sterilized by, and



compatible with, ethylene oxide sterilization, and the second of said compartments being relatively small and comprising:

(b) a space sealed by a bacteria proof peelable barrier layer and holding a medicament containing rubber closured vial, said vial being separately sterilized by, and compatible with, heat sterilization.

4,523,680

TAPE CASSETTE STORAGE BOX COUPLING ACCESSORY

Shoichi Saito, and Hideo Shirako, both of Tokyo, Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

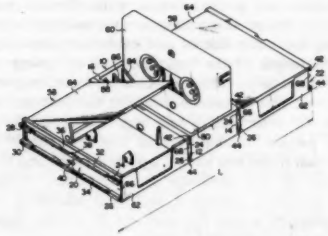
Continuation of Ser. No. 317,015, Nov. 2, 1981, abandoned. This application Dec. 19, 1983, Ser. No. 563,876

Claims priority, application Japan, Nov. 11, 1980, 55-1690967[U]

The portion of the term of this patent subsequent to Aug. 4, 1998, has been disclaimed.

Int. Cl.[3] **A47B** *81/06;* **B65D** *85/67*

U.S. Cl. 206—387 **6 Claims**



1. A tape cassette storage box coupling accessory to be coupled between first and second tape cassette storage boxes each of which comprises a storage box body for holding a micro cassette, the storage box body having first and second substantially rectangular parallel lateral faces; a cover rotatably coupled with said storage box body so as to be rotatable between a first position in which said cover houses, in cooperation with said storage box body, a micro cassette held in said storage box body and a second position in which said cover is in a position which allows said micro cassette to be removed from said storage box body; a first engaging means formed on the first parallel lateral face said storage box body, said first lateral face and said first engaging means being integrally formed of a plastic material having elasticity; and a second engaging means formed on the second parallel lateral face of said storage box body, said second lateral face and said second engaging means being integrally formed of a plastic material having elasticity;

the coupling accessory comprising:

an accessory body;

a first substantially rectangular lateral face on said accessory body and having the same dimensions as that of the parallel lateral faces of the storage box body, said first lateral face of said accessory body comprising a first engaging means integrally formed therewith of a plastic material having elasticity and which is the same as said first engaging means of the storage box body; and

a second substantially rectangular lateral face on said accessory body which is substantially parallel to said first lateral face of said accessory body, said second lateral face of said accessory body extending in the same longitudinal direction as said first lateral face of said accessory body and having the same dimensions as said first lateral face of said accessory body, and said second lateral face of said accessory body comprising a second engaging means integrally formed therewith of a plastic material having elasticity and which is the same as said second engaging means of the storage body;

said accessory body having a width between said first and second lateral faces thereof such that the distance between said first and second lateral faces thereof is such that the distance from the first parallel lateral face of a first tape cassette storage box body to the second parallel face of a second tape cassette storage box is substantially equal to the longitudinal length of a conpact-type tape cassette storage box when the second engaging means on said second lateral face of the first tape cassette storage box and the first engaging means on said first lateral face of the second tape cassette storage box are coupled respectively to the first engaging means on said first lateral face of said accessory body and the second engaging means on said second lateral face of said accessory body to thereby connect said accessory body between the first and second tape cassette storage boxes;

said first engaging means of said storage box body and of said accessory body including first to fourth click-type engaging means formed in the four corners of said first lateral face and having the same length and the same direction for engagement, a first guide plate formed between the first click-type engaging means and the third click-type engaging means and extending in the direction of the engaging length of said first click-type engaging means and guiding to engage with said first or third click-type engaging means, and a second guide plate formed between the second click-type engaging means located in a direction to cross the direction or the engaging length of said first click-type engaging means and the fourth click-type engaging means located in the direction of the engaging length of said second click-type engaging means and guiding to engage with said second or fourth click-type engaging means;

said second engaging means of said storage box body and of said accessory body including first to fourth click-type engageable means formed in the four corners of said second lateral face and having the same length and the same direction for engagement, a third guide plate formed between the first click-type engageable means and the third click-type engageable means located in the direction of the engaging length of said first click-type engageable means, whereby said first or third click-type engageable means is guided in engagement, and a fourth guide plate formed between the second click-type engageable means located in a direction to cross the direction of the engaging length of said first click-type engageable means and the fourth click-type means located in the direction of the engaging length of said second click-type engageable means, whereby said second or fourth engaged click is guided in engagement;

said first to fourth click-type engaging means of said first engaging means and said first and second guide plates being isolated from one another;

said first and third click-type engaging means of said first engaging means protruding from said first lateral face substantially at right angles thereto and having projecting ends thereof bent away from said second and fourth click-type engaging means along a direction substantially parallel with said first lateral face;

said second and fourth click-type engaging means of said first engaging means protruding from said first lateral face substantially at right angles thereto and having projecting ends thereof bent away from said first and third click-type engaging means along a direction substantially parallel with said first lateral face;

said first and third click-type engageable means of said second engaging means protruding from said second lateral face substantially at right angles thereto and having projecting ends thereof bent toward said second and fourth click-type engageable means along a direction substantially parallel with said second lateral face;

said second and fourth click-type engageable means of said second engaging means protruding from said second lateral face substantially at right angles thereto and having projecting ends thereof bent toward said first and third click-type engageable means along a direction substantially parallel with said second lateral face; and

the respective projecting ends of said first to fourth click-type engaging means of said first engaging means and said first to fourth click-type engageable means of said second engaging means having chamfer portions formed along their respective directions for engagement, so that respective chamfer portions of said first to fourth click-type engageable means of said second engaging means of the tape cassette storage box are brought into contact with the respective chamfer portions of said first to fourth click-type engaging means of said first engaging means of said accessory when said second engaging means of said tape cassette storage box is brought into contact with said first engaging means of said accessory along a direction to cross the engaging direction of said first engaging means;

said accessory body having substantially flat upper and lower faces which are substantially parallel with each other and which are substantially coplanar with upper and lower faces of the first and second tape cassette storage boxes when connected together and when the covers of the first and second tape cassette storage boxes are in said first position;

said upper face of said accessory body including a holding means for removably holding a micro cassette in a position such that substantially flat upper and lower surfaces of the micro cassette intersect said upper and lower faces of said accessory body;

said lower face of said accessory body including at least one of said first and second engaging means; and

said holding means including a cavity formed in said upper face of said accessory body and having partition walls for holding a plurality of micro cassettes, and projections for making point contact against the insertion and departing of the micro cassettes in the cavity, the depth of said cavity being so determined that a relatively large part of the outer surface of each of said micro cassettes is projected out from said cavity.

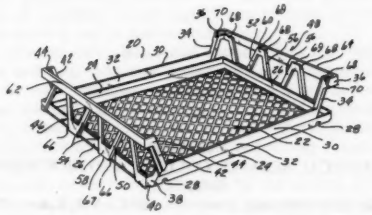
4,523,681

MULTILEVEL STACKING CONTAINER

Elsmer W. Kreeger, Howell, Mich., assignor to Pinckney Molded Plastics, Inc., Pinckney, Mich.

Filed Mar. 5, 1984, Ser. No. 586,289
Int. Cl.³ B65D *21/04*
U.S. Cl. 206—507 **2 Claims**

1. In a multi-level stacking container having a rectangular bottom, first and second end walls projecting upwardly from respective opposite ends of said bottom and side walls projecting upwardly from each of the opposite sides of said bottom, said end walls having complementary vertically upwardly and downwardly extending recesses whereby two like containers may be alternatively stacked in a high-level stacked relationship by resting the first and second end walls of the upper container upon the respective second and first end walls of the lower container or in a low-level stacked relationship wherein the first and second end walls and side walls of the upper container are nested within the respective first and second end walls and side walls of the lower container; the improvement wherein said end walls are of a first length and a first height, said side walls being of a second length greater than said first length and having a main central section of a length at least equal to said first length and a height approximately one-half of



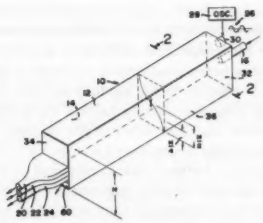
said first height, relatively short end sections on each side wall of a height equal to said first height joined to the adjacent end walls, stacking rails projecting downwardly from said bottom along the respective side edges thereof, and means defining a pair of upwardly opening notches in each of said stacking rails spaced from each other by a distance equal to the spacing between said side walls whereby two like containers may be stacked one upon the other in a crosswise relationship wherein the end walls of one of the containers are parallel to the side walls of the other and with the upper edges of the central sections of the side walls of the lower container projecting upwardly into the notches in the stacking rails of the upper container to stably support the upper container in an intermediate level stacked relationship upon the lower container.

4,523,682

ACOUSTIC PARTICLE SEPARATION

Martin B. Barmatz, Glendale; James D. Stoneburner; Nathan Jacobi, both of Pasadena, and Taylor G. Wang, Glendale, all of Calif., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed May 19, 1982, Ser. No. 379,601
Int. Cl.³ B07C *5/00*
U.S. Cl. 209—638 **5 Claims**



1. A method for separating particles comprising:

applying sinusoidal acoustic energy to a chamber, which is resonant to a chamber mode, to establish an acoustic standing wave pattern that forms a force potential well in the chamber;

positioning a plurality of particles in said chamber within said well, while a nonacoustic force field is also applied to said chamber to urge particles away from the center of said well; and

removing particles from selected positions in said force potential well, so that some particles are removed from other particles according to the positions they assumed in said well;

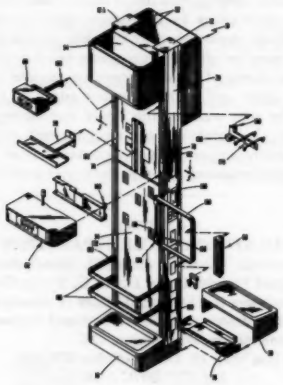
said particles include particles of a wide range of sizes including particles of a desired size range and particles larger than said desired range, and said step of applying includes applying acoustic energy of a level which is weak enough to allow particles larger than said desired size range to drop out of said well.

4,523,683

MEDICAL SERVICE COLUMN AND MOUNTING BRACKET

Eugene H. Fullenkamp, Batesville, and Cecil R. Lohrey, Brookville, both of Ind., assignors to Hill-Rom Company, Inc., Batesville, Ind.

Filed Jan. 31, 1983, Ser. No. 462,682
Int. Cl.³ A47B 47/00
U.S. Cl. 211—190 **8 Claims**



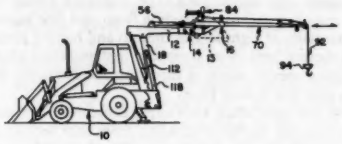
1. A medical service column in combination with a member removably attached thereto, said column is free-standing and has front and rear sides with service outlets mounted on at least said front side for connection with fluid and electrical conduits, said column being positionable adjacent a corner of the head of a patient's bed to locate medical services proximate to the patient, said column including pairs of vertically extending tracks at the front and rear sides of the column, each track extending substantially the height of said column, said member including at least one locking slide configured to be connected to a track for vertical sliding movement therealong, and a manual actuator for locking said slide at selected vertical locations along said track, wherein said member comprises a holder having a rotatable arm mounted in a bore thereof for rotation about a vertical axis, resilient means for yieldably retaining said arm in various positions of horizontal adjustment, and means for expanding said resilient means radially outwardly into engagement with a wall of said bore.

4,523,684

CRANE TOOL FOR ATTACHMENT TO A BACKHOE ARM

Jerry Baisden, 2758 Merritt St., Springfield, Ohio 45503

Filed Sep. 30, 1982, Ser. No. 431,503
Int. Cl.³ B66C 23/04
U.S. Cl. 212—175 **4 Claims**



1. A crane tool for use with an attachment removably mounted to the arm of a backhoe machine from which the bucket has been removed, the backhoe further having a first hydraulic cylinder disposed along the arm normally for pivoting the bucket when in place on the arm and a controllable source of hydraulic fluid under pressure normally supplied to a second hydraulic cylinder on the backhoe arm, the attachment including a frame having a first end fittable on the backhoe arm and an outer end extending therebeyond, means for removably fastening the frame to the arm, a sliding member connectable with the end of the first cylinder for movement thereby along the frame, and guide means for directing the sliding member along the frame between the first and the outer ends, said crane tool comprising:

a sleeve;

means for removably mounting said sleeve to the frame such that said sleeve is directed substantially parallel to the backhoe arm;

a boom having an inner end insertable through and moveable along said sleeve and an outer end extending substantially beyond said sleeve;

means for connecting the inner end of said boom with said sliding member for movement of said boom along said sleeve in response to movement of said sliding member by the first cylinder;

a hydraulically-powered winch and a cable connected thereto, said winch being mounted to said sleeve and arranged for playing out and retracting said cable along said boom;

means for connecting said winch with the source of hydraulic fluid; and

a pulley mounted for rotation at said outer end of said boom and receiving said cable for passage therearound.

4,523,685

REVOLVING BLOCK FOR HIGH PLACE WORKING VEHICLE

Fusaji Terayama; Tetsuo Kohzai, and Naoyuki Murai, all of Osaka, Japan, assignors to Morita Fire Pump Mfg. Co., Ltd., Osaka, Japan

Filed May 22, 1984, Ser. No. 612,780
Claims priority, application Japan, Nov. 30, 1983, 58-227306
Int. Cl.³ B66C 23/78
U.S. Cl. 212—247 **4 Claims**

1. A revolving block for a high place working vehicle comprising:

a first annular body fixed on the body of the high place working vehicle and having an axis perpendicular to the vehicle body;

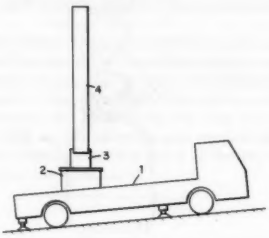
a second annular body consisting of a lower portion coaxially and relatively rotatably assembled with said first annular body and an upper portion having a rotary axis obliquely crossing the rotary axis of said lower portion;

a third annular body consisting of a lower portion coaxial and relatively rotatably assembled with the upper portion

of said second annular body and an upper portion having a rotary axis which obliquely crosses the rotary axis of said lower portion of said third annular body and which is normally aligned with the axis of said first annular body;

a fourth annular body coaxially and relatively rotatably assembled with said upper portion of the third annular body;

a table fixed to the fourth annular body;



a driving device for rotating the table relative to the third annular body;

a rotation preventing device for preventing rotation of the table relative to the vehicle during correcting operation;

a first fixing device for fixing the first and second annular bodies to each other when desired; and

a second fixing device for fixing the second and third annular bodies to each other when desired.

4,523,686

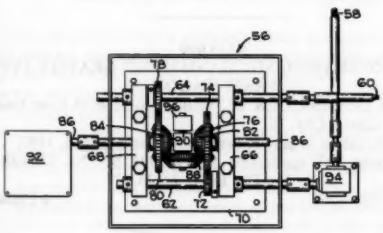
ANTI-TWO BLOCK SYSTEM

Donald E. Moore, Marion, and David W. Olsen, Palo, both of Iowa, assignors to FMC Corporation, Chicago, Ill.

Continuation of Ser. No. 402,517, Jul. 28, 1982, abandoned. This application Aug. 31, 1984, Ser. No. 647,851

Int. Cl.³ B66C *13/48*

U.S. Cl. 212—152 **1 Claim**



1. In a crane having a boom pivotally mounted on the crane's upper works with a first wire rope wound on a boom hoist drum and connected to the boom, the boom being raised and lowered by respectively reeling in and paying out rope on said boom hoist drum, a hook block suspended from a second wire rope trained over a sheave rotatably carried on the boom and wound on a hook block drum, the hook block being moveable toward the boom by reeling in the second wire rope and by lowering the boom; an anti-two block system for preventing the hook block from approaching within a predetermined distance of said sheave, comprising:

a differential mechanism having a pair of side gears journaled on an output shaft and a spider gear meshing with said side gears and rotatable on a cross-shaft affixed to the output shaft;

boom drive means between said boom hoist drum and one of said side gears for determining the angular orientation of said boom;

hook block drive means between said hook block drum and the other of said side gears for determining the amount of said second rope payed off of said hook block drum;

a switch connected to and closeable by said output shaft in response to the output shaft being rotated as a result of said hook block reaching said predetermined distance;

first and second hydraulic pump and motor circuits for respectively driving said boom drum and said hook block drum;

a first and second pneumatic rams for respectively controlling the first and second circuits;

a first manual valve moveable to a boom lower position to direct air pressure to said first ram to drive said boom hoist drum to pay off said first rope;

a second manual valve moveable to a hook raise position to direct air pressure to said second ram to drive said hook block drum to reel in said second rope;

a first solenoid valve interposed between said first manual valve and said first ram permitting free communication therebetween when paying out and reeling in said first rope;

a second solenoid valve interposed between said second manual valve and said second ram permitting free communication therebetween when paying out and reeling in said second rope;

said solenoid valves being energized by the closing of said switch and thereby shifted to block communication of air pressure from said manual valves when moved to said positions.

4,523,687

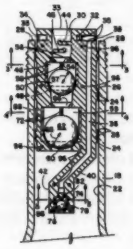
NON-REFILLABLE POURER

John Hullihen, Rte. 4, Box 959, Hillsboro, Oreg. 97123

Filed Oct. 29, 1984, Ser. No. 665,762

Int. Cl.³ B65D *49/06*

U.S. Cl. 215—25 **16 Claims**



1. A non-refillable pour spout, for use in the neck of a bottle for permitting liquid to be poured through said spout from within said bottle but resisting replenishment of the liquid in said bottle, comprising:

(a) a generally cylindrical spout body member having a top and bottom and adapted to fit sealingly within the neck of a bottle;

(b) a liquid pouring duct extending through said spout body member and including discharge tube means for defining a liquid discharge opening adjacent the top of said spout body member;

(c) a first check valve located in said liquid pouring duct in said spout body member, including a first valve seat and a movable first valve closure body held within said spout body upwardly adjacent said first valve seat, said first check valve communicating with said discharge tube means;

(d) a second check valve located in said liquid pouring duct in said spout body member, including a second valve seat and a movable second valve closure body held within said spout body upwardly adjacent said second valve seat, said

second check valve being located beneath said first check valve and communicating with said first check valve;

(e) an air inlet tube attached to said spout body member and having a lower end extending downwardly therebeneath;

(f) an air inlet conduit having an open upper end located in said top of said spout body member, said air inlet conduit extending through said spout body member and said air inlet tube, from said top of said spout body member to said lower end of said air inlet tube; and

(g) a third check valve located in said air inlet conduit, including a valve seat and a movable third valve closure body held within said air inlet conduit and located upwardly adjacent said third valve seat.

4,523,688

CHILD-PROOF CLOSURE FOR A CONTAINER

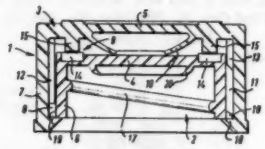
Peter J. Puresevic, 6 Neyland Close, Tonteg, Mid Glamorgan CF38 1HH, and Julian D. Taylor, 3 St. Teilo's Way, Watford Farm Estate, Caerphilly, Mid Glamorgan CF8 1EA, both of Wales

Filed Jun. 3, 1982, Ser. No. 384,559

Claims priority, application United Kingdom, Jun. 4, 1981, 8117100

Int. Cl.³ B65D *55/02*

U.S. Cl. 215—220 **9 Claims**



1. A closure device for a container having a cylindrical opening, comprising solely;

an inner cylindrical closure member;

an outer cylindrical closure member;

the inner and outer cylindrical closure member each comprising an end member, a skirt member and first and second drive means;

means biassing the inner and outer closure members axially apart, and means retaining same against separation;

the first drive means being between the respective skirt members and being operative to rotate the inner and outer closure members in unison in one sense only, such first drive means comprising a driving dog on the inner surface of the skirt member of said outer closure member and a ratchet means on the outer surface of the skirt member of the inner closure member, and,

the second drive means being associated with said means biassing the inner and outer members axially apart and being operative to rotate the first and second closure members in unison in the opposite sense only when pressure is applied to the outer member in the axial direction sufficiently to overcome the pressure of the biassing means to move the outer member towards the inner member and the outer member is rotated in the opposite sense, such second drive means comprising a socket of one closure end member and a projection of the other closure end member and wherein the biassing means comprises a resilient member carried by one of said end members and contacting the adjacent surface of the other end member.

4,523,689

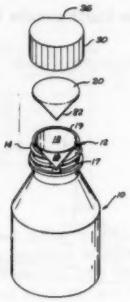
REUSABLE TAMPER-PROOF CONTAINER

Herman Laub, 622 S. Palm Ave., Alhambra, Calif. 91778

Filed Feb. 27, 1984, Ser. No. 584,245

Int. Cl.³ B65D *23/00*

U.S. Cl. 215—232 **14 Claims**



1. A sealable container comprising

a bottle having a mouth in a cylindrical discharge neck, said neck being externally threaded along its circumference and wherein said neck has a first recessed area extending from an outer perimeter on said neck closest to said mouth to an outer perimeter on said neck further from said mouth,

a flexible closure covering said mouth and affixed to said cylindrical discharge neck, said flexible closure having a pull tab, said pull tab being positioned in said first recessed area, and

a cap being adapted to be screwed onto said cylindrical discharge neck, said cap having a circular top surface and a cylindrical sidewall extending down from said top surface, wherein said sidewall is internally threaded along its circumference and wherein said sidewall has a second recessed area extending from the inner perimeter on said sidewall closest to said top surface to an inner perimeter on said sidewall further from said top surface.

4,523,690

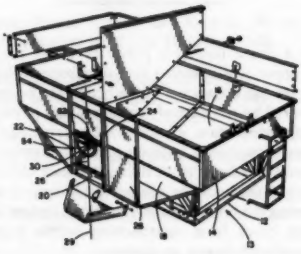
DOOR OPERATING MECHANISM FOR GRAVITY TYPE FARM WAGON

Erwin D. Cornelius, Loda, Ill., assignor to M & W Gear Company, Gibson City, Ill.

Continuation-in-part of Ser. No. 446,461, Dec. 3, 1982, abandoned. This application Aug. 1, 1984, Ser. No. 636,818

Int. Cl.³ B65D *43/26*

U.S. Cl. 220—262 **6 Claims**



1. In a gravity box of the type including a side wall with a side discharge opening, a vertically sliding door mounted for reciprocal movement in channel means on the side wall to

open and close the discharge opening, the improvement comprising, in combination:

a door operating mechanism for positively raising and positively lowering the sliding door, said mechanism including

a pivot shaft with a cable spool thereon, said shaft defining a pivot axis, said shaft attached to the side wall above the maximum open travel position of the door;

a vertically projecting door support bracket connected to the door, said bracket having an end extending vertically above the shaft pivot axis when the door is in the closed position;

a flexible cable connected at one end to the door and having an intermediate section of the cable wrapped around and attached at an intermediate point to the spool and with the opposite end of the cable attached to the bracket end; and

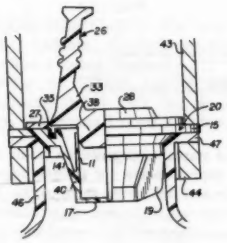
means for rotating the spool about the axis of the shaft to wind the cable in one direction and unwind the cable in the opposite direction on the spool to thereby positively raise or lower the door.

4,523,691

PORT STRUCTURE FOR I.V. CONTAINER

Mark E. Larkin, Lindenhurst, and Kenneth H. Knox, Vernon Hills, both of Ill., assignors to Abbott Laboratories, North Chicago, Ill.

Filed Apr. 8, 1983, Ser. No. 483,392
Int. Cl.³ B65D *33/16*
U.S. Cl. 220—266 **12 Claims**



1. A port structure for a container which will permit access by a piercing member in a leak-resistant manner comprising:

a container port defined by a tubular member;

a port sealing member positioned in said port tubular member, said port sealing member including a movable tubular portion, a port connecting portion and substantially linear flexible supporting portion, said substantially linear flexible supporting portion positioned between said connection portion and said movable tubular portion, said substantially linear flexible supporting portion secured to said movable tubular portion and connected to said movable tubular portion at a point spaced from the outer end of said movable tubular portion to form an acute angle therewith and in a manner to hold said movable tubular portion in a freestanding manner away from said connecting portion, said connecting portion sealably engaged with said container port tubular member whereby movement of said movable tubular portion is provided by the flexing of said flexible supporting portion;

a pierceable diaphragm member operatively positioned in said movable tubular portion at the end of said movable tubular portion positioned innermost in said container port to seal the contents of said container from outside atmosphere;

a plurality of locating members extending outwardly from said substantially linear flexible supporting portion to position said port sealing member in said container port tubular member; and

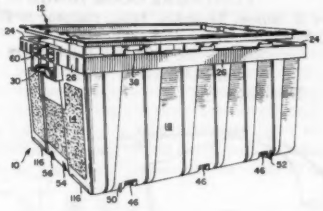
a sealing cap operatively connected to said container port.

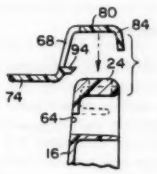
4,523,692

REVERSIBLE SECURITY COVER FOR STACKABLE AND NESTABLE TOTE BOX

Jack Lemkin, 3945 Brookham Dr., Grove City, Ohio 43123

Filed Jun. 30, 1983, Ser. No. 509,581
Int. Cl.³ B65D *41/16, 43/10, 21/04*
U.S. Cl. 220—306 **4 Claims**





1. In combination, a tote box and a security cover therefor,

(a) said tote box comprising first and second end walls and first and second side walls, a bottom joining said end walls and said side walls together into a upwardly opening rectangular receptacle,

(b) a horizontal lip extending about the perimeter of said receptacle at the upper end thereof,

(c) a skirt depending vertically from said lip and extending about the perimeter of said receptacle,

(d) a first slot formed in said first end wall and a second slot formed in said second end wall, said slots being located below said horizontal lip and in alignment with each other,

(e) a plurality of guides projecting upwardly above said lip from said first and second side walls,

(f) said security cover comprising first and second end walls, and first and second side walls, a planar bottom joining end walls and said side walls together into a shallow, dished configuration,

(g) a continuous horizontal flange extending around the perimeter of the end walls and side walls of the security cover,

(h) a plurality of elongated slots extending through said flange of said cover,

(i) a first overhang depending vertically from said flange along the first end wall of said cover, and a second overhang depending vertically from said flange along the second end wall of said cover,

(j) a skirt depending vertically below said lip on the tote box,

(k) at least one locking tab projecting horizontally outwardly from the first end wall of said cover and at least one locking tab projecting horizontally outwardly from the second end wall of said cover,

(l) said first and second overhangs engaging said skirt to locate the locking tabs relative to said slots in the end walls of the receptacle,

(m) said cover being placed atop said receptacle so that said guides extend through said elongated slots and align said cover upon said receptacle,

(n) said cover being executed in a resilient plastic so that said locking tabs on both of said end walls of said cover can be snapped into locking engagement with the slots in the first and second end walls of said tote box.

4,523,693

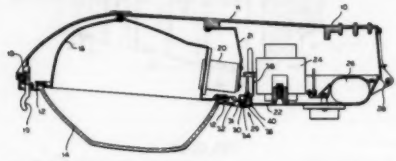
LUMINAIRE DOOR HINGE

Edward B. Bilson, Memphis, Tenn., assignor to ITT Corporation, New York, N.Y.

Filed Sep. 20, 1984, Ser. No. 652,521

Int. Cl.³ B65D *43/14, 51/04*

U.S. Cl. 220—337 **7 Claims**



7. A luminaire comprising:

a top section;

a bezel door mounted to close against said top section by a first hinge assembly, a ballast door mounted to close against said top section by a second hinge assembly;

said first hinge assembly including a hinge bar comprising a generally cylindrical, elongated bar extending generally parallel to a hinge axis between said top section and said bezel door, and a hinge plate comprising a flat, generally hook-shaped bar having a base section extending outwardly from said top section, a middle section looped around said hinge bar and a distal end section extending back toward said top section in such manner that said bezel door is hinged to said top section but yet can be removed from said top section by swinging open said ballast door along said second hinge assembly and then lifting said bezel door such that said hinge bar is lifted out of said hinge plate.

4,523,694

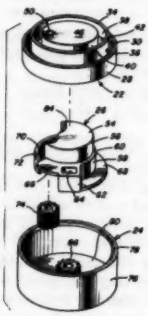
DISPENSING CAP

Douglas F. Veltri, 551 Washington St., Carlstadt, N.J. 07072

Filed Dec. 16, 1983, Ser. No. 562,187

Int. Cl.³ B65G *59/00*

U.S. Cl. 221—265 **12 Claims**



1. A dispensing cap for a container to enable a single item to be dispensed from the container, said dispensing cap comprising an inner cap adapted to be non-rotatably connected to the container, an outer cap rotatably associated with the inner cap and container, a rotor positioned between the inner cap and outer cap and rotatable in relation to each of the caps and the container, said inner cap including a discharge port, said outer cap including a discharge port, said rotor including a chamber movable between positions in alignment with and misalignment with the ports in the inner and outer caps with the chamber in the rotor being of a size to receive only a single item to be discharged, and means interconnecting the inner cap, rotor and outer cap to rotate the rotor in response to rotational movement of the outer cap with the rotating movement of the rotor being at a different speed than the rotating movement of the outer cap for moving the rotor from a position with its chamber in alignment with the port in the inner cap to a position in alignment with the port in the outer cap upon rotational movement of the outer cap through a predetermined arc.

4,523,695

SURGICAL STAPLER

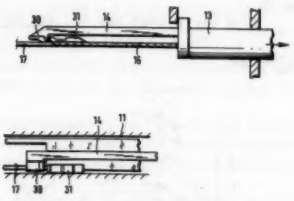
Karl Braun, Talheim, and Jürgen Fetzer, Gerstetten-Dettingen, both of Fed. Rep. of Germany, assignors to Intermedicat GmbH, Emmenbrucke, Switzerland

Filed Feb. 9, 1983, Ser. No. 465,354

Claims priority, application Fed. Rep. of Germany, Feb. 10, 1982, 32045220

Int. Cl.³ A61B *17/04*

U.S. Cl. 227—8 **16 Claims**



1. A surgical stapler comprising a staple channel, a staple magazine for staples, means for advancing the staples in the staple magazine and delivering them to the staple channel, an anvil surface disposed at the end of the channel movable relative to the channel between an operating position and a retracted position, a driver displaceable in the channel relative to the anvil surface for deforming a staple in cooperation with the anvil surface, and a leaf spring to which the anvil surface is fastened, the leaf spring extending in the channel and having an inclined surface which cooperates with a projection on the driver for moving the anvil surface.

4,523,696

APPARATUS FOR DISPENSING A MIXTURE OF MUTUALLY REACTIVE LIQUIDS

Denis S. Commette, Mantoloking, and Eugene R. LaMonica, Bricktown, both of N.J., assignors to Gusmer Corporation, Lakewood, N.J.

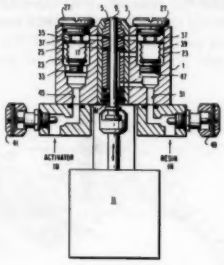
Filed Apr. 13, 1984, Ser. No. 600,014

Int. Cl.³ B05B *7/04, 15/02*

U.S. Cl. 222—135 **9 Claims**

1. In apparatus for dispensing a mixture of mutually reactive liquids, comprising a gun head having a bore opening therethrough to define a cylindrical mixing chamber, means to deliver mutually reactive liquids along separate paths through said head and into said bore to mix in said bore and be dispensed through one end of said bore, a cylindrical valving rod reciprocable in the bore between a forward position in which the valving rod seals the liquid delivery means from each other and occupies the mixing chamber, and a rearward position in which the valving rod opens the mixing chamber and permits the flow of said liquids into the mixing chamber, the rod sliding in sealing relationship with the side walls of the mixing chamber in all positions of the rod in the mixing chamber; the improvement comprising means to feed one of said liquids along

the outer surface of the valving rod in said retracted position of the valving rod and along most of the length of the valving rod which was disposed in the mixing chamber in said forward position of the valving rod, the forward end of the valving rod being disposed in said bore and isolating the mixing chamber from said means to feed one of said liquids in said retracted



position of the valving rod, said separate path of said one liquid bypassing the forward end of the retracted valving rod so that said one liquid leaves the outer surface of the valving rod rearwardly of said forward end thereof and enters the mixing chamber forwardly of said forward end of the valving rod in said retracted position of the valving rod.

4,523,697

LIQUID DISPENSING PACKAGE

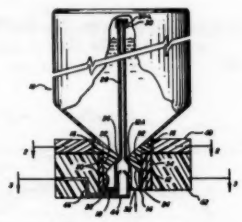
Edward L. Jeans, Ledbury, England, assignor to Cadbury Schweppes Limited, London, England

Continuation of Ser. No. 140,698, Apr. 16, 1980, abandoned. This application Oct. 9, 1981, Ser. No. 310,488

Claims priority, application United Kingdom, Jul. 11, 1979, 7924162

Int. Cl.³ B67D *1/04*

U.S. Cl. 222—185 **57 Claims**



1. A container for dispensing a concentrate through air to a receptacle at a fixed and predetermined flow rate comprising:

(a) a first container part for containing a volume of the concentrate;

(b) a first valve part in communication with said volume;

(c) a second container part having a second mating valve part therein and having means forming an outlet opening, said second container part movable to selectively move said first and second valve parts with respect to each other to allow, while said first and second valve parts are moved apart, a continuous flow of said concentrate from said first part, through said valve parts and out said outlet opening;

(d) means establishing a constricted area through which concentrate must flow when being dispensed, the cross section of said constricted area being predetermined as a function of the viscosity of said concentrate;

(e) means to permit introduction of a gas from outside the container to the interior of said first container part;

(f) means to maintain an essentially constant head pressure in the interior of said first container part over a range of concentrate levels in said first container part, whereby said means establishing and said means to maintain, together will result in a controlled constant flow rate from said outlet opening;

(g) said first container part comprises a bottle with a neck and said second container part comprises a closure part including a cap disposed over said neck; and

(h) said first valve part comprising an insert in said neck, said insert having an outer part with a large bore, and an inner part with a smaller bore in communication with said bottle, and said second valve part comprising a projecting member on said cap arranged to abut against said insert, said projection having a central bore therethrough to the outside of said cap, a tube extending from said bore through said inner part of said insert, with a clearance, for connecting a source of pressure to the inside of said container.

4,523,698

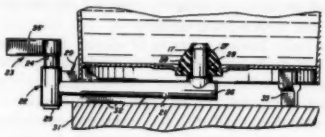
BEER KEG ACCESSORIES

Kurt Kienlein, Rothenbach, and Ralph D. Reese, Schwaig, both of Fed. Rep. of Germany, assignors to W. Duncan Porter, Carefree, Ariz.

Filed Jan. 27, 1984, Ser. No. 574,531

Int. Cl.³ B67D *3/00*

U.S. Cl. 222—185 **5 Claims**



1. A cock for tapping beer kegs comprising:

an elongated hollow center piece having a length greater than the radius of an associated keg,

said center piece being open at one end and closed at its other end,

a first hollow pipe extension mounted to extend laterally of said center piece at its closed end and in communication with the hollow interior thereof,

the other end of said first pipe extension being open ended and having means for puncturing, extending into and sealing with the bung hole of a beer keg,

a second open-ended pipe extension being mounted to extend laterally of the open end of said center piece and in communication with its hollow interior,

a pet cock comprising a cylindrical sleeve mounted for rotation within said second pipe extension,

said sleeve having an opening therein for alignment with the open end of said center piece in one position and blocking the open end of said center piece when rotated to another position,

a handle mounted on said sleeve at one end thereof for closing said sleeve and for selectively rotating said sleeve to align said opening with the open end of said center piece and to block said open end of said center piece,

the other end of said sleeve being open to form with said second pipe extension a nozzle for the cock,

said center piece being provided with a bifurcated first flange mounted to extend laterally thereof in the same direction as and at a distance from said first pipe extension which substantially equals the radius of a keg on which it is to be mounted and a second flange extending diagonally outwardly from said center piece in a direction opposite to said first flange for aiding in supporting the keg when associated therewith,

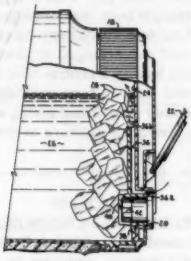
the bifurcation of said first flange being provided for receiving therein the ridge of an associated beer keg.

4,523,699

COMBINATION ICE SCREEN AND AIR VENT FOR LIQUID CONTAINER

Tony E. Branscum, Cowley County, Kans., assignor to Gott Corporation, Winfield, Kans.

Filed Apr. 29, 1983, Ser. No. 489,809
Int. Cl.³ B67D *3/00*
U.S. Cl. 222—189 **1 Claim**



1. A combination air vent and ice screen device for application to a liquid container having a top portion presenting a flat inner surface, an opening through which liquid may be poured from the container, and a spout wall extending around the opening and projecting outwardly from the top portion of the container, said device comprising:

a tubular insert having a size to fit closely within the spout wall in engagement therewith in a manner to be frictionally retained within the spout wall in registration with the opening, said insert having open opposite ends;

a planar extension rigid with said insert and projecting laterally to one side thereof, said extension having a collar projecting from the perimeter thereof and contacting the flat inner surface of the top portion of the container;

a thickened wall portion of said tubular insert on one side thereof having a greater thickness than the remainder of the insert;

an air channel formed partially in said thickened wall portion of the insert and partially in said extension to provide a vent passage extending from the outside of the container to the inside of the container, said channel having a terminal end extending through said collar and said channel permitting air to pass therethrough into the container when liquid is poured from the container through said tubular insert; and

a generally cup shaped ice screen rigid with said insert and projecting therefrom into the container to prevent ice in the container from blocking the flow of liquid into the insert, said ice screen having a side wall and an end wall both exposed to the interior of the container and both presenting a plurality of openings through which liquid may pass.

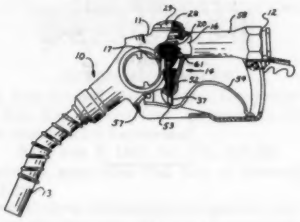
4,523,700

LOW FLOW CONTROL NOZZLE

Allen M. Bower, Erie, and Gary L. Weeks, West Springfield, both of Pa., assignors to Emco Wheaton, Inc., Conneaut, Ohio

Filed Nov. 27, 1981, Ser. No. 325,296
Int. Cl.³ B67D *5/04*
U.S. Cl. 222—505 **2 Claims**

1. In a fuel dispensing nozzle including a housing, means for coupling the housing to a flexible delivery hose, an outlet spout, valve means in the housing for controlling flow from the delivery hose to the outlet spout, said valve means including a poppet and a cooperating seat, a hand lever for manually operating said control valve, the improvement comprising means responsive to movement of the hand lever to tilt open the poppet so that the poppet rocks about a point on its periphery and the forces required to crack open the valve are reduced, said poppet tilting means including means to apply a generally axially directed opening force to said poppet at a point eccentric to its central axis, said poppet tilting means including an actuator rod centered on the axis of said valve seat and disposed between said hand lever and said poppet, and a lifter carried on an end of said actuator rod adjacent said poppet, said lifter and poppet including opposed flat contacting surfaces, one of said flat contacting surfaces being disposed in a plane oblique to the axis of said seat when said poppet is in a closed position on said seat, said opposed flat surfaces being arranged to tilt said poppet to an angle of less than 25° and



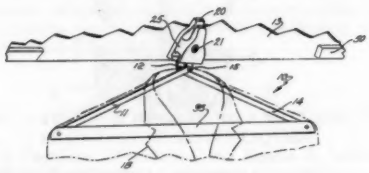
thereafter upon full abutting contact between said oblique flat surface and the opposed flat surface and further lever movement to cause said poppet to translate in straight-line motion without further tilting action away from said seat, and means for centering said poppet on said seat, said centering means including surface areas contacting said poppet, said surface areas and poppet being sufficiently loose with respect to one another to permit initial tilting of said poppet to said angle but close enough with respect to one another to thereafter restrain said poppet from moving laterally relative to said seat during straight-line translating motion.

4,523,701

COLLAPSIBLE AUTOMOTIVE CLOTHING HANGER

Curtis J. Armbruster, 2626 Groesback Ave., Lansing, Mich. 48912

Filed Sep. 30, 1982, Ser. No. 429,809
Int. Cl.³ A47J *51/10*
U.S. Cl. 223—94 **46 Claims**



1. An extensible and collapsible clothing hanger for use in automotive vehicles comprising:

a first arm mounted for pivotal motion relative to the headliner of a vehicle;

a second arm mounted for pivotal motion relative to the headliner of a vehicle,

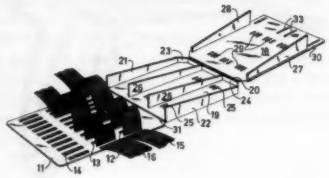
said first and second arms being upwardly pivotable to a storage position against the headliner of the vehicle;

a third arm and a fourth arm both pivotally connected to the headliner, said first and second arms being pivotally connected to said third and fourth arms, respectively, said first and second arms overlapping and crossing each other; and

stop means for limiting the downward travel of said first and second arms, said first and second arms being downwardly pivotable to a use position defined by said stop means, said first and second arms providing an opposing

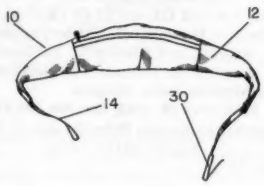
pair of downwardly sloping surfaces in said use position which are suitable for supporting clothing thereon.

4,523,702
TOOL HOLDER
Matti Viio, 191 51 Sollentuna, Sweden
Filed Aug. 15, 1983, Ser. No. 523,629
Claims priority, application Sweden, Aug. 17, 1982, 8204739
Int. Cl.[3] A45F *5/00*
U.S. Cl. 224—101 9 Claims



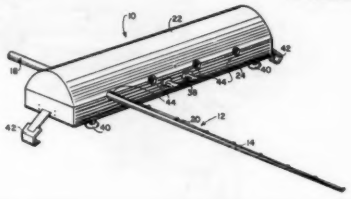
1. A tool holder comprising an upwardly open tool-supporting receptacle arranged for attachment to the clothing of a user, wherein a first side plate and a second side plate forming the receptacle are hinged together, said side plates being provided with fixed outer wall sections, wherein means are provided for detachably mounting between said fixed outer wall sections one or more partitions that form tool-receiving compartments, wherein one end of one of said side plates is foldably joined to a third plate having a plurality of vertical slots arranged therein, said slots being intended to cooperate with straps or like means in a manner to form loops of sufficient size to receive and hold additional tools, and wherein said third plate is freely pivotable about a pivot joint between said third plate and the side plate to which said third plate is foldably joined.

4,523,703
COAT PACK
George T. McKenna, 3238 Federal Cir., Broomfield, Colo. 80020
Filed Jan. 9, 1984, Ser. No. 569,387
Int. Cl.[3] A45F *3/00*
U.S. Cl. 224—224 6 Claims



1. A torso-encircling carrier, comprising:
an elongated tubular body having a tapering tubular body portion at each longitudinal end thereof, defining a substantially full-length continuous interior compartment between the opposite longitudinal ends and defining an arm-insertion passage means to said compartment in each of said tapering tubular body portions for, in use, permitting a user's arm to reach through the compartment and draw in an object to be carried in the compartment;
a closure means attached to each of said tapering tubular body portions for resealably opening said passages and permitting, in open condition, in use, through-passage of a carried object into said compartment between the opposite closure means; and
fastening means for releasibly attaching the opposite ends of the body to form a closed figure wearable in a torso-encircling manner.

4,523,704
CAR TOP ROD AND REEL CARRIER APPARATUS
Leonard Washington, 225 Brunswick Ave., Trenton, N.J. 08618
Filed Dec. 22, 1983, Ser. No. 564,508
Int. Cl.[3] B60R *9/04;* A01K *97/08*
U.S. Cl. 224—328 4 Claims



1. A car top carrier apparatus for carrying assembled rod and reel combinations, said apparatus comprising:
a top section;
a bottom section;
hinge means for attaching said top and bottom sections together, said top and bottom sections forming the shell of carrier apparatus, said carrier apparatus having relatively long front and rear portions and relatively short side portions;
a first plurality of cut-out sections located along the front portion of said top section;
a first plurality of cut-out sections located along the front portion of said bottom section such that said first plurality of front cut-out sections in said top and bottom sections mate to form a first set of aperture means;
a second plurality of cut-out sections located along the rear portion of said top section;
a second plurality of cut-out sections located along the rear portion of said bottom section such that said second plurality of rear cut-out sections in said top and bottom sections mate to form a second set of aperture means so that the rod portion of a rod and reel combination may pass through said first set of aperture means and the butt portion of said rod and reel combination may pass through said second set of aperture means so that said reel portion of said rod and reel combination is captured between said top and bottom sections;
handle means attached to said front portion of said carrier apparatus for manual transportation of said apparatus; and,
attachment means for attaching said carrier apparatus to the roof of a car,
wherein the long axis of said rod and reel combination lies in a plane transverse to the long axis of said carrier when said rod and reel combination is captured in said carrier.

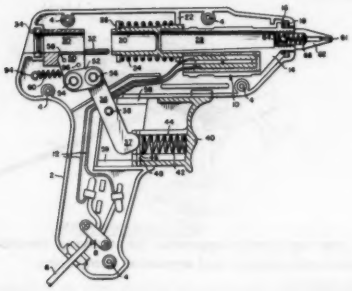
4,523,705
MECHANISM FOR GLUE GUN
Richard W. Belanger, 25 Collins St., Amesbury, Mass. 01913, and Peter S. Melendy, 11 Crestview Dr., Exeter, N.H. 03853
Filed Jan. 14, 1983, Ser. No. 458,218
Int. Cl.[3] B65H *17/26*
U.S. Cl. 226—127 5 Claims

1. In a mechanism for gripping an element and moving it in a first direction, the combination of
(a) handle means
(b) housing means mounted on said handle means for contacting said element and carrying said element in said first direction,
(c) grip means pivotally mounted to said housing means at a

pivotal connection for gripping said object upon rotation about said connection,

(d) means for applying a first force to said grip means at a first location for rotation said grip means and for moving said housing in said first direction,

(e) means extending between said handle means and a second location on said grip means for applying a first torque and



a second force in a second direction opposite to said first direction to said grip means, said first torque being less than a second torque applied to said grip means by said first force, whereby said grip means rotates upon application of said first force before said housing moves in said first direction and said housing moves in a second direction opposite to said first direction upon cessation of said first force.

4,523,706

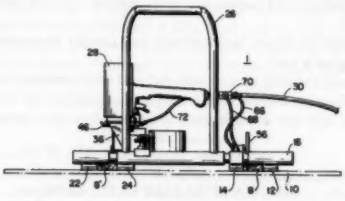
AUTOMATIC BATTEN SETTER

Norman S. Haley, P.O. Box 32, Chantilly, Va. 22021

Filed Apr. 7, 1983, Ser. No. 482,719

Int. Cl.³ B25C *5/13, 7/00*; B27F *7/09*

U.S. Cl. 227—7 **6 Claims**



1. An automatic nailer comprising:

a nailing gun having a trigger means for initiating a first supply of compressed air to said nailer for providing a nailing force; and

an air hose line for providing a second supply of compressed air and having an air outlet means at one end thereof being operatively associated with said trigger means, exiting of compressed air from said air outlet means impinging directly upon said trigger means to actuate said trigger means, thereby initiating said first supply of compressed air to said nailer for providing a nailing force.

4,523,707

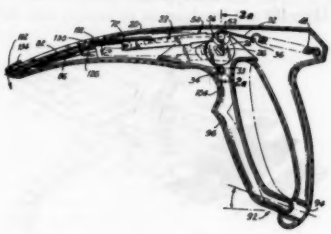
SURGICAL STAPLER

Joseph W. Blake, III, 88 Main St., New Canaan, Conn. 06840, and Jack W. Kaufman, 357 Frankel Blvd., Merrick, N.Y. 11566

Filed May 4, 1982, Ser. No. 374,692

Int. Cl.³ A61B *17/04*

U.S. Cl. 227—19 **32 Claims**



1. A surgical stapler having improved visibility at a wound or tissue site and having stored therein at least one staple for suturing tissue, comprising: frame structure means, adapted to be held by a hand, having a generally thin nose and downwardly curved section for directing the staple at the tissue site and including gripping means having first and second handle means; said frame structure means further having an anvil about when the staple is formed by a translatable driver manually actuated in a substantially translatable direction by said hand, through means embodying a substantially translatable trigger portion; a staple ejector for removing the staple from said anvil; one of said handle means being connected to said translatable driver and the other of said handle means being connected to said frame structure means; biasing means for returning said translatable driver from a staple forming position to a staple reloading position; and said actuating means comprises a toggle-like mechanism having a force transmission member linking together said driver and a connecting end portion engageable with a drum rotatable by strap means connected to said translatable trigger portion.

4,523,708

APPARATUS FOR SOLDERING THE WINDING TO THE COMMUTATOR OF AN ELECTRIC MACHINE

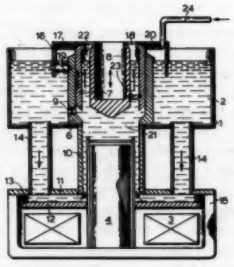
Pavel M. Minchev; Hristomir D. Hristov; Stoimen S. Balinov; Mihail H. Angelov, and Nikolay V. Yordanov, all of Sofia, Bulgaria, assignors to Institute Po Metaloznanie I Technologia Na Metalite, Sofia, Bulgaria

Filed May 19, 1983, Ser. No. 496,177

Claims priority, application Bulgaria, Jun. 2, 1982, 56866

Int. Cl.³ B23K *37/06*

U.S. Cl. 228—37 **5 Claims**



1. Apparatus for soldering the wires of the rotor winding of

an electric machine to its commutator, comprising a tank for holding a supply of molten solder, means for holding a rotor, a pump for delivering molten solder from the tank to the zone wherein the wires from the rotor winding are connected to the segments of the commutator, means for preventing the delivery of molten solder to the connection of the segments of the commutator unless a rotor is disposed within and supported by the means for holding a rotor in the apparatus, and means for the protection of the molten solder from oxidation, the means for the protection of the molten solder from oxidation comprising a hood which closes off the tank from the atmosphere when there is no rotor positioned in the rotor holding means, said hood then forming a closed space at the top of the tank, means for supplying said closed space with an oxidation-preventing gas, and means for opening said closed space and leading gas therefrom to the zone wherein the wires from the rotor winding are connected to the segments of the commutator when a rotor is positioned in and supported by the means for holding a rotor.

4,523,709

APPARATUS FOR ALIGNING AND SUPPORTING SIMILAR BODIES

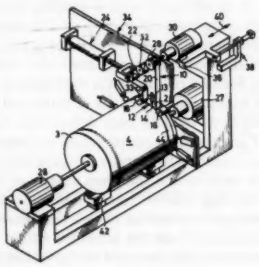
Claudio Rossi, Wetzikon, Switzerland, assignor to Rossi AG Wetzikon, Werkzeug- Und Spezialmaschinenbau, Switzerland

Filed Jun. 6, 1983, Ser. No. 501,564

Claims priority, application Switzerland, Jun. 4, 1982, 3482/82

Int. Cl.³ B23K *37/02, 37/04*

U.S. Cl. 228—48 **9 Claims**



1. An apparatus for mutually aligning and rotatably supporting at least two similarly shaped bodies for welding contiguous circumferentially extending edges of the bodies, comprising:

an axially stiff, endless belt for partially encircling and bridging the contiguous edges, said belt having a body engaging section for extending around and engaging the bodies over an arc of less than 360° and having a loop section, said body engaging section having ends defining said arc and a gap on opposite sides of said ends, said loop section extending radially away from said body engaging section at said ends, said body engaging section being parallel to a rotational axis of the bodies;

guide members engaging outer surfaces of said belt at said ends;

a tension member engaging an inner surface of said belt in said loop section; and

welding means, located in said gap and radially and axially within said belt, for welding the contiguous edges of the bodies in said gap.

4,523,710

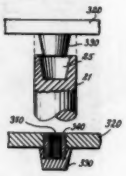
METHOD FOR FABRICATING A FASTENER PLATE

Theodore A. Renshaw, North Babylon, and Joseph A. Curatolo, Jr., Jackson Heights, both of N.Y., assignors to Fairchild Industries, Inc., Chantilly, Va.

Filed Apr. 12, 1983, Ser. No. 484,195

Int. Cl.³ B23K *20/10*

U.S. Cl. 228—111 **2 Claims**



1. A method of fabricating a fastener plate having at least one fastening element ultrasonically welded to a base plate, said method comprising the steps of ultrasonically welding to a base plate a cylindrical or truncated conical reinforcement element; forming a aperture through said base plate and a portion of said reinforcing element; and inserting a fastening element into said aperature.

4,523,711

METHOD FOR BONDING SILVER-BASED CONTACT

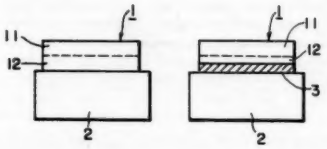
Kazuo Kondo; Seiji Imamura; Shigemasa Saito; Mamoru Akimoto, and Mitsuo Sunaga, all of Kanagawa, Japan, assignors to Fuji Electric Co., Ltd., Kanagawa, Japan

Filed Sep. 14, 1981, Ser. No. 301,864

Claims priority, application Japan, Sep. 18, 1980, 55-129696; Aug. 11, 1981, 56-125485

Int. Cl.³ B23K *1/04*

U.S. Cl. 228—198 **1 Claim**



1. A method of bonding silver-based contacts comprising the steps of: disposing a silver-based contact in contact with a support at least a surface of which is made of a cupreous material with a pressure of less than 1 kgf/cm^2 therebetween; heating in the absence of a braze said contact and said support in a non-oxidizing atmosphere at a temperature of more than 700° C. whereby silver atoms in the contact and copper atoms in the support diffuse to form an intermediate bonding phase, and further comprising forming vent hole in said support at a position on which contact is mounted.

4,523,712

SOLDERING COMPOSITION AND METHOD OF SOLDERING THEREWITH

Frank M. Zado, Lawrence Township, Mercer County, N.J., assignor to AT&T Technologies, Inc., New York, N.Y.

Division of Ser. No. 588,634, Mar. 12, 1984, Pat. No. 4,495,007. This application Sep. 14, 1984, Ser. No. 650,601

Int. Cl.³ B23K *35/362*

U.S. Cl. 228—207 **20 Claims**

1. A soldering composition comprising a rosin mixture which comprises:

(a) rosin;

(b) an activator having at least one halogen atom and at least one destabilizing substituent selected from the group consisting of (a') the carboxyl group, (b') the aryl group, (c') the carbonyl group and (d') the halogen atom;

(c) a surfactant selected from the group consisting of (a'') a polycarboxylic acid, (b'') a hydroxyl substituent of (a''),

(c'') a keto acid and (d'') a mixture of any of the foregoing surfactants; and

(d) 2 to 25 weight percent of linoleic acid dimer and a metal solder alloy and wherein said activator is present in an amount of from 1 to 15 weight percent and said surfactant is present in an amount of 0 to 25 weight percent of the components (a), (b) and (c).

4,523,713

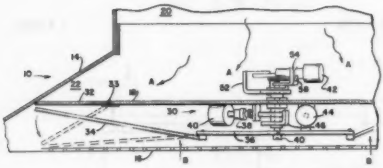
THERMALLY ACTUATED DIFFUSER

James R. Kline, Moraga, and Peter Brand, San Francisco, both of Calif., assignors to Acutherm, Ltd., Emeryville, Calif.

Filed Jan. 20, 1983, Ser. No. 459,468

Int. Cl.³ F24F *13/16*

U.S. Cl. 236—1 C **14 Claims**



12. A diffuser of a kind used to regulate the volume of flow of air from a duct to a room or other space, comprising:

flow control means for varying the size of an opening in the diffuser to regulate the volume flow of air from the duct through the diffuser and into the room or other space;

first sensor actuator means responsive to a first room air temperature and operatively associated with the flow control means for modulating the flow control means in a normally closed to open mode of operation in response to changes in room air temperature when air of one temperature is supplied through the duct;

second sensor actuator means responsive to duct air temperature and operatively associated with the flow control means for moving the flow control means to an open position in response to air of another temperature in the duct; said another temperature higher than said one temperature;

said second sensor actuator means being further formed for disassociating said first sensor actuator means from said flow control means in response to air of another temperature in the duct; and

third sensor actuator means responsive to a second room air temperature and operatively associated with the flow control means for modulating the flow control means from a normally open to closed mode of operation in response to changes in room air temperature when air of another temperature is supplied through the duct.

4,523,714

HEATING APPARATUS

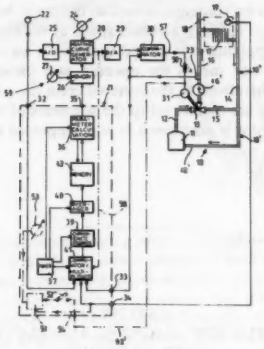
Rolf Isermann, Seeheim-Jugenheim, Fed. Rep. of Germany, assignor to Centra-Bürkle GmbH & Co., Schönaich, Fed. Rep. of Germany

Filed Mar. 21, 1983, Ser. No. 477,148

Claims priority, application Fed. Rep. of Germany, Mar. 22, 1982, 3210428

Int. Cl.³ F24D *3/00*

U.S. Cl. 236—46 R **14 Claims**



1. In a method of operating a heating system in which a heating fluid for the heating of at least one room is brought to an advance heating temperature and has a heating capability which can be represented by a value T_V before being used to heat said room and a temperature T_R representing the heating effect in terms of room temperature and resulting from use of the heating fluid is controlled in dependence upon an external temperature T_A in accordance with a heating curve, the improvement which comprises optimizing said heating curve by approximating the heating curve with a heating curve equation including at least one parameter, automatically determining a number of values for said parameter in time-spaced succession with each value being established by a statistical regression method from values at least in part determined by instantaneous values of T_A, T_V and T_R, substituting the parameter thus determined in said equation to thereby increase the precision of the heating curve with which the temperature of the room is controlled, and storing values determined by said instantaneous values, averaging the stored values, and determining the values for said parameter from the averaged stored values, the values which are stored and averaged being values $y=T_V-T_R$ and $u=T_R-T_A$ representing temperature differences, at least for initial optimization of said heating curve, the room temperature being controlled from a predetermined starting heating curve and thereafter, the room temperature being controlled by a previously optimized heating curve.

4,523,715

METHOD AND APPARATUS FOR AIR CONDITIONER CONTROL

Eiji Ohsawa, Ebina, and Shunsuke Kajita, Hiratsuka, both of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed Apr. 25, 1984, Ser. No. 603,828

Claims priority, application Japan, Sep. 14, 1983, 58-168397

Int. Cl.³ F24F *7/00*

U.S. Cl. 236—49 **8 Claims**

1. An apparatus for controlling an air conditioner used in a process of treating air in a compartment to regulate its temperature, said air conditioner having an air passage terminating in a plurality of outlets opening into said compartment, comprising:

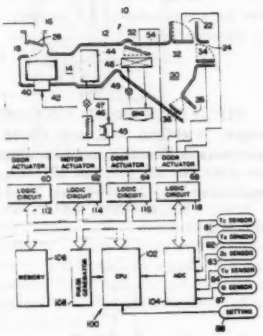
outlet control means for closing each of said outlets to block air flow therethrough, said outlet control means being operable to open a selected number of outlets to permit air flow therethrough;

air-flow control means for controlling the rate of air flow through said air passage toward said compartment;

means for setting a desired value for compartment temperature and generating an electrical signal indicative of said desired compartment temperature value;

a source for generating an electrical signal indicative of an actual value for compartment temperature;

a control circuit for determining a value corresponding to a setting of said air-flow control means, said control circuit including means for selecting one of said outlets to open the same in response to a single-flow mode requirement and for selecting two of said outlets to open the same in response to a dual-flow mode requirement, said control circuit further including means for subtracting said desired value from said actual value to obtain a difference between said actual and desired compartment temperature values, said control circuit including means for comparing said difference with a first, second, third and fourth predetermined value, said second predetermined value being a negative value greater than said first predetermined value,



said third predetermined value being a positive value less than said fourth predetermined value, and said control circuit further including means responsive to a dual-flow mode requirement for determining said value for a setting of said air-flow control means as:

a first preset value when said difference is less than said first predetermined value;

a first variable value less than said first preset value when said difference is between said first and second predetermined values, said first variable value decreasing with said difference increasing;

a second preset value less than said first variable value when said difference is between said second and third predetermined values;

a second variable value greater than said second preset value when said difference is between said third and fourth predetermined values, said second variable value increasing with said difference increasing;

a third preset value greater than said second variable value when said difference is greater than said fourth predetermined value; and

a circuit coupled between said control circuit and said air-flow control means for converting said determined value into a setting of said air-flow control means for controlling the rate of air flow through said air passage.

4,523,716

COOLING AND HEATING AIR JET DEVICE IN BUILDING INTERIOR OR EXTERIOR STRUCTURE

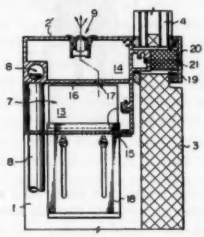
Karl Gartner, Gundelfingen, Fed. Rep. of Germany, assignor to Yoshida Kogyo K.K., Tokyo, Japan

Filed Aug. 1, 1983, Ser. No. 519,372

Claims priority, application Japan, Aug. 2, 1982, 57-134895

Int. Cl.³ F24F *3/00*; F24D *5/10*

U.S. Cl. 237—56 **6 Claims**



1. A cooling and heating air jet device in a building interior or exterior structure including a framework of hollow vertical and horizontal wall support members, said framework of hollow wall support members forming an air duct through which cooling or heating air is passed, a selected one of said wall support members being formed with a plurality of air jet openings spaced in the longitudinal direction of the same, the hollow interior of said selected wall support member is divided into two adjacent and parallel chambers by a partition wall having a plurality of communication holes spaced in the longitudinal direction of the same, one of said chambers forms a part of said air duct and a first pressure equalizing chamber and the other of said chambers forms a second pressure equalizing chamber, and said plurality of air jet openings are formed in the side wall of said second pressure equalizing chamber, each of said vertical and horizontal wall support members being provided in the hollow interior thereof with an air flow passage forming said air duct and a heat medium flow passage, said heat medium flow passage in said selected wall support member being integrally formed with said support member and provided in said second pressure equalizing chamber, said plurality of air jet openings positioned in the center portion of said side wall in the width direction thereof, said plurality of communication holes offset relative to said air jet openings on the exterior side of said partition wall, and said heat medium flow passage in said selected wall support member positioned near the interior side of said selected wall support member.

4,523,717

ANIMAL TRAIL MARKER AND SCENT CONTAINER

Richard J. Schwab, 120 Monroe St., Mauston, Wis. 53948

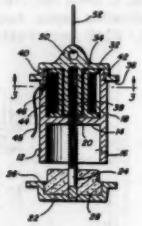
Filed Nov. 30, 1983, Ser. No. 556,591

Int. Cl.³ A01N *25/00*

U.S. Cl. 239—56 **10 Claims**

1. An animal trail marker and scent container, said container including an elongated hollow sleeve having first and second ends and a central partition dividing the interior of said sleeve into first and second opposite and outwardly opening recesses, said partition having a central threaded bore formed therethrough, first and second caps for removably closing the first and second ends of said sleeve, said first cap including a first central threaded shank projecting through said first recess, threaded through said bore and projecting into said second recess, said second cap including a second central outwardly projecting shank having a blind bore formed therein in which said threaded shank is removably threadingly engaged, a spool removably journalled on said second shank and of an axial length to be clamped between opposing surfaces of said partition and said second cap when disposed within said second

recess and said second cap is at least substantially tightly closed, said second end of said sleeve including a lateral opening formed therein opening into said second recess from the exterior of said sleeve, an elongated flexible member having



one end anchored relative to said spool and partially wound thereon, the other end of said flexible member extending outwardly through said lateral opening, and animal scent material disposed within said first recess.

4,523,718

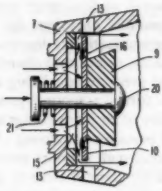
SHOWERHEAD

H. Alton Pearson, 125 Cedarbrook Rd., Ardmore, Pa. 19003

Filed Mar. 3, 1980, Ser. No. 126,407

Int. Cl.³ B05B *1/18, 7/00*

U.S. Cl. 239—106 **1 Claim**



1. A showerhead for reducing water usage while providing effective shower effect comprising a body having an inlet end adapted to be connected to a source of water under pressure, a water outlet end spaced apart from said inlet end, and a bore defining a passage extending between said inlet and outlet ends, comprising:

at least one diffusing stage within said bore comprising a disc having a plurality of orifices essentially parallel to the direction of water flow;

a diffusing washer within said bore fixedly attached to the downstream face of said disc to deflect the water from a path essentially parallel to the axis of said bore to a path which intercepts the interior wall of said water outlet before exiting the showerhead, wherein said diffusing washer and disc are movably mounted within said bore allowing said disc and washer to move axially downstream creating an alternate path for water flow around said disc if the orifices of said disc are clogged.

4,523,719

FUEL INJECTION NOZZLE FOR INTERNAL COMBUSTION ENGINES

Karl Hofmann, Remseck, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

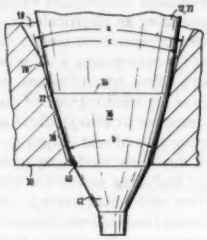
Filed Aug. 12, 1983, Ser. No. 522,769

Claims priority, application Fed. Rep. of Germany, Oct. 13, 1982, 3237882

Int. Cl.³ F02M *61/06*

U.S. Cl. 239—533.12 **4 Claims**

1. A fuel injection nozzle for internal combustion engines comprising a housing, a bored nozzle body in said housing which is part of said housing including a conical portion which joins with and is upstream of a conical injection port, said injection port including a valve seat, a reciprocable valve needle received in said bored nozzle body arranged to open in opposition to fuel flow and against a closing force, said valve needle having a conical segment thereof having a sealing edge cooperating with said valve seat and adjoining this edge having a conical throttling pintle extending into said injection port, said valve seat being formed on the nozzle body along said injection port, said segment of the valve needle having the sealing edge merging in a smooth angular manner with the throttling pintle, and the conical angle of the throttling pintle being greater by a maximum of 1.5 degrees than the conical angle of the injection port.



4,523,720

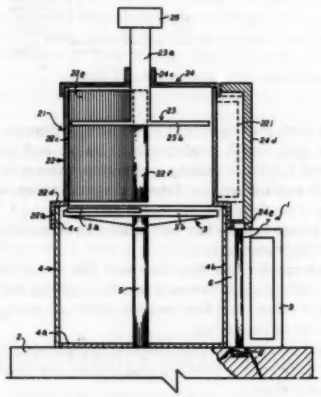
FOOD PROCESSOR ASSEMBLY

John Behringer, Wickford, R.I., and Pierre Martin, Paris, France, assignors to Robot-Coupe, S.A., Bagnolet, France

Continuation of Ser. No. 339,377, Jan. 15, 1982, abandoned. This application May 21, 1984, Ser. No. 613,003

Int. Cl.³ B02C *18/12*

U.S. Cl. 241—37.5 **17 Claims**



1. A food processor comprising:

a base;

a motor housed in said base;

a drive shaft extending upwardly from said base and drivable by said motor;

a bowl supportable on said base;

a cutting tool housed in said bowl, mountable on said drive shaft, and including a cutting blade having radially outermost and innermost edges; and

a tubular member mountable on said bowl such that an inner

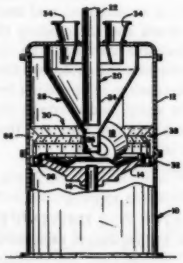
surface of said tubular member overlies a path swept out by the outermost edge of said cutting blade when said cutting tool is mounted on said drive shaft and said drive shaft is driven by said motor, said tubular member having a vertical boss situated substantially at the center of said tubular member such that an outer surface of said boss overlies a path swept out by the innermost edge of said cutting blade when said cutting tool is mounted on said drive shaft and said drive shaft is driven by said motor, and said tubular member further having a vertical wall extending from the inner surface of said tubular member to the outer surface of said boss.

4,523,721

BOWL MILL WITH PRIMARY CLASSIFIER ASSEMBLY

Theodore V. Maliszewski, North Canton, and David E. Kohler, Windsor, both of Conn., assignors to Combustion Engineering, Inc., Windsor, Conn.

Filed Dec. 8, 1982, Ser. No. 447,916
Int. Cl.³ B02C *23/32*
U.S. Cl. 241—61 **7 Claims**



1. In a bowl mill having a substantially closed separator body, a rotatable grinding surface mounted for rotation in a first direction within the separator body and upon which pulverization of material is effected, an annular passage formed between the separator body and the circumference of the rotatable grinding surface, the improvement of a primary classifier assembly comprising:

a. vane means mounted on the periphery of the rotatable grinding surface for rotation therewith in the first direction, said vane means including a plurality of vane wheel segment assemblies mounted in spaced relation around the circumference of the rotatable grinding surface, said plurality of vane wheel segment assemblies each embodying vane portions mounted so as to project outwardly from the rotatable grinding surface at a predetermined angle relative to the direction of rotation of the rotatable grinding surface, said vane portions being operative as the rotatable grinding surface rotates through 360° to cause air flowing through the annular passage in surrounding relation to the rotatable grinding surface to change direction and to flow in a direction opposite to the direction of rotation of the rotatable grinding surface thereby causing larger particles of pulverized material

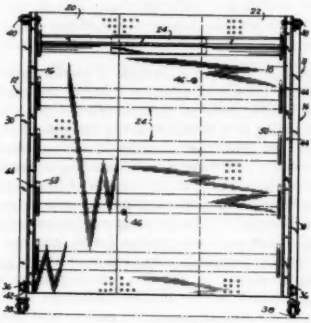
b. converging/diverging orifice means mounted within the bowl mill above and in spaced relation to the rotatable grinding surface, said converging/diverging orifice means being operative to cause the air flowing through an interior of the bowl mill to be directed toward a center of the bowl mill thereby causing through this change of direction of the air larger particles of pulverized material entrained in this air to lose their momentum and separate from the air for return to the rotatable grinding surface for further pulverization, said converging/diverging orifice means comprising a plurality of intermediate liner support plates, a plurality of deflector liner support plates, a multiplicity of intermediate liners, a multiplicity of deflector liners and a plurality of deflector side liners, each of said plurality of intermediate liner support plates being mounted in spaced relation one to another around the circumference of the separator body, each of said plurality of deflector liner support plates being mounted around the circumference of the separatc body in spaced relation one to another and in interposed relation between adjoining ones of said plurality of intermediate liner support plates, each of said plurality of deflector liner support plates having a first one said plurality of deflector side liners secured thereto at one end thereof and having a second one of said plurality of deflector side liners secured thereto at another end thereof, each of said intermediate liner support plates having at least one of said multiplicity of intermediate liners secured thereon in superimposed relation thereto, and each of said plurality of deflector liner support plates having at least one of said multiplicity of deflector liners mounted thereon in each of first row, a second row and a third row so as to bear a superimposed relation thereto.

4,523,722

ADJUSTABLE DISPLAY APPARATUS

Melvin Cohen, Franklin Lake, and Fred V. Duyne, Ringwood, both of N.J., assignors to Melrose Displays, Inc., Passaic, N.J.

Filed Apr. 29, 1983, Ser. No. 490,237
Int. Cl.³ A47F *5/00*
U.S. Cl. 211—175 **13 Claims**



13. Adjustable display apparatus comprising:

a pair of upstanding, laterally spaced supporting elements each of which comprises an elongated front leg,

an elongated rear leg,

an upper section joining said front and rear legs,

a lower section joining said front and rear legs;

a pair of upstanding support panels disposed in overlapping relation at their inner end positions and wherein said support panels have a plurality of apertures therethrough;

means for removably mounting said support panels at their outer end portions on said supporting elements which means comprises elongated, upstanding support bars removably connected to said supporting elements, said support bars being releasably connected to said support panels;

laterally adjustable means for removably connecting the lower end portions of said supporting elements which means comprises telescoping sections; and

laterally adjustable display means comprising telescoping shelves having mounting fingers at opposite ends thereof removably mounted on said support panels and extending laterally between said supporting elements and wherein a plurality of said display means are mounted in laterally

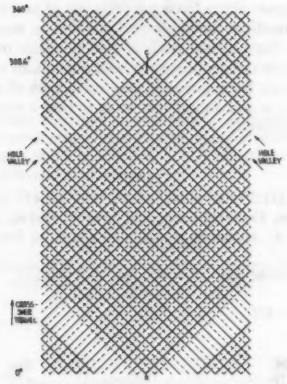
extending, vertically spaced relation on the supporting panels.

4,523,723

WINDING FLEXIBLE MATERIAL WITH LAYER SHIFTING

Frank W. Kotzur, Mahopac, N.Y., assignor to Windings, Inc., Goldens Bridge, N.Y.

Filed Sep. 14, 1983, Ser. No. 532,043
Int. Cl.³ B65H *55/04*
U.S. Cl. 242—43 R **5 Claims**



1. A method of winding a package of flexible material in a figure-8 pattern upon a mandrel by rotating the mandrel and winding the flexible material thereon from a traverse mechanism reciprocating in a direction along the axis of rotation of the mandrel and with the winding crossovers progressing around the winding to form a radial opening extending from the exterior of the winding to the interior thereof, comprising winding the flexible material with a normal gain representing a given ratio of the speed of the traverse mechanism with respect to the speed of the mandrel rotation for at least one layer of wind, adjusting the normal gain to a lower or higher gain at the last winding crossover in the first winding layer until the angular displacement of the winding crossover has been displaced a given amount, adjusting the gain to said normal gain and upon completion of at least a layer with said normal gain adjusting the gain by an amount substantially equal to the aforesaid first gain adjustment but in a direction opposite thereto until the angular displacement of the winding crossover has been displaced a given amount, adjusting the gain back to said normal gain, and upon completion of at least a layer with said normal gain repeating the aforementioned gain adjustments until the wind is complete.

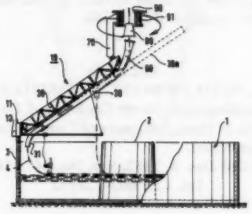
4,523,724

SEMI-AUTOMATIC FIXED POSITION MACHINE FOR COILING DOWN A CABLE

Yves Rérolle, Lyons, France, assignor to Societe Anonyme dite-les Cables de Lyon, Cedex, France

Filed Mar. 14, 1984, Ser. No. 589,370
Claims priority, application France, Mar. 15, 1983, 83 04230
Int. Cl.³ B65H *54/00;* **B21C** *47/02, 47/00*
U.S. Cl. 242—54 R **7 Claims**

1. A semi-automatic fixed position machine for coiling-down a cable inside a tank, the tank comprising a circular outer wall delimiting internally, a coiling-down zone, and wherein the cable to be coiled down being delivered to the machine from a point vertically above the center of the tank, the improvement wherein a hollow hub is fixedly mounted above the tank at its center through which said cable passes vertically downwardly, and the machine comprises an upper support bracket mounted for rotation on said hub about the vertical axis of the tank, a sloping coiling-down arm, means connecting said arm at its upper end, to said bracket, and running means fixed to said arm, at is lower end, for supporting said arm lower end on the top of said outer wall of the tank with said running means running along said outer wall, a carriage fitted to said arm for longitudinal displacement along the arm, and said machine



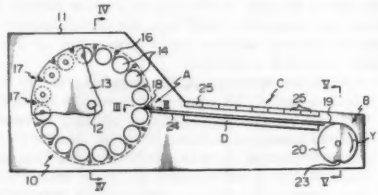
including an inlet chute mounted to said bracket for receiving cable to be coiled down and for guiding the cable into said longitudinally displaceable carriage, the lower end of said carriage serving to dispense the cable into the tank, for coiling-down, with the cable passing, in operation from the inlet chute into a variable point along said carriage depending upon its longitudinal position along said arm, and then from the lower end of said carriage into said tank.

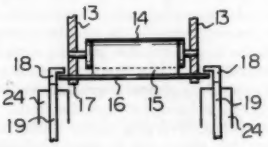
4,523,725

APPARATUS FOR DRIVING TAPES

Toshinobu Futagawa, Tokyo, Japan, assignor to Advanced Technology Business Creation, Inc., Tokyo, Japan

Filed Jan. 23, 1984, Ser. No. 572,946
Claims priority, application Japan, Jan. 28, 1983, 58-12350
Int. Cl.³ B65H *19/08;* **G11B** *15/58*
U.S. Cl. 242—58 **2 Claims**





1. Tape driving apparatus comprising:
(a) a plurality of rollers,
(b) each roller having a separate length of tape wound thereon with one end of the tape being free,
(c) laterally protruding means carried by the free end of each tape,
(d) a rotatable drum having the plurality of rollers mounted thereon in circular disposition about the drum's axis of rotation, each roller being independently rotatable relative to the drum,

(e) selector means for causing the drum to turn whereby any of its rollers can be individually brought to a pick-up station,

(f) an inputting unit having means for reading information on the tapes, the inputting unit having a reading zone,

(g) means for engaging the means which protrude laterally from the free end of the tape on the roller at the pick-up station and drawing that tape through the reading zone to a second station, the laterally protruding means and the means with which it is engaged travelling paths on either side of the reading zone,

(h) a take-up reel disposed at the second station, the take-up reel having means for engaging the laterally protruding means on the tape drawn to the second station,

(i) means associated with the take-up reel for causing that reel to turn in the direction causing the tape to be wound on that reel,

(j) means associated with each reel in the drum for rewinding the tape on the roller, and

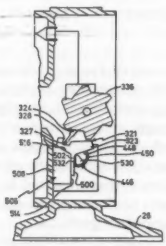
(k) means associated with the take-up reel for allowing that reel to rotate in the direction enabling the tape to be rewound on its roller.

4,523,726

ANTI-REVERSE MECHANISM

Steven L. Swisher, Tulsa, Okla., assignor to Brunswick Corporation, Skokie, Ill.

Filed Oct. 5, 1983, Ser. No. 539,315
Int. Cl.³ A01K *89/01*
U.S. Cl. 242—84.2 R **12 Claims**



1. In a fishing reel having a housing with a deck plate, a rotatable crankshaft, a ratchet fixed on the crankshaft, a pivotable pawl movable between an engaged position with the ratchet to prevent reverse rotation of the crankshaft and a disengaged position wherein rotation of the crankshaft is uninhibited by the pawl, and a pawl actuating means frictionally carried on the crankshaft to pivot the pawl between the disengaged position upon forward rotation of the crankshaft and the engaged position upon reverse rotation of the crankshaft, the improvement comprising:

a slot defined in the deck plate for reception of the pawl; add

a rotatable anti-reverse control member extending through an opening in the housing and having a leg extending across the slot to block escape of the pawl from the slot, said leg directly engageable with the pawl,

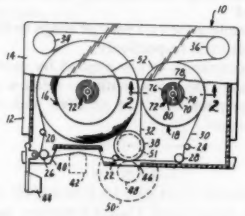
the anti-reverse control member being rotatable between one position that holds the pawl disengaged from the ratchet and a second position that permits the pawl to be moved selectively from an engaged to a disengaged position from the ratchet.

4,523,727

NON-OSCILLATING SPOOL FOR BELT DRIVEN CARTRIDGE

Eddie T. Morioka, Roseville, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Jun. 29, 1984, Ser. No. 626,136
Int. Cl.³ G03B *1/04*; G11B *15/32*
U.S. Cl. 242—192 **7 Claims**



1. A tape spool adapted for mounting on and rotation relative to a cylindrical pin extending perpendicular from a first wall toward a second parallel wall defining an enclosure and adapted to engage both of said walls and resist movement toward either, comprising:

a first flange adjacent said first wall;

a second flange adjacent said second wall;

a hub interconnecting said flanges and providing a cylindrical winding surface;

a bore through said first flange and into said hub which closely but freely surrounds said pin;

a tubular collar interposed between said first wall and said first flange to support said first flange out of contact with said first wall, which collar has an inner diameter allowing free passage of said pin and a thin wall to reduce the area of contact between said collar and said first wall;

a wear-button protrusion extending beyond said second flange coaxial with said hub bore to contact said second wall; and

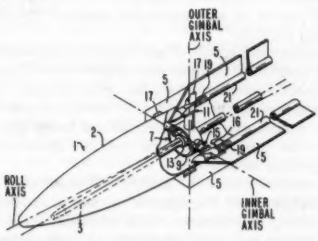
means interposed between said spool and said wear-button protrusion for biasing said protrusion toward said second wall and said spool toward said first wall so that axial movement of said spool is resisted.

4,523,728

PASSIVE AUTO-ERECTING ALIGNMENT WINGS FOR LONG ROD PENETRATOR

Alson C. Frazer, Santa Ana, Calif., assignor to Ford Aerospace & Communications Corporation, Detroit, Mich.

Filed Mar. 7, 1983, Ser. No. 472,891
Int. Cl.³ F42B *11/06, 13/32*
U.S. Cl. 244—3.29 **10 Claims**



1. In a guided moving warhead having an elongated penetrator rod therewithin, means for aligning the rod with the veloc-

ity vector of the moving warhead, said aligning means comprising:

two pairs of wings pivotally mounted about an outer surface of the warhead, each of the first pair of wings being free to pivot about a first axis, and each of the second pair of wings being free to pivot about a second axis orthogonal to the first axis;

two-axis gimbal means for mounting the penetrator rod within the interior of the warhead, said first and second axes constituting two orthogonal axes of the gimbal means; and

means for coupling the two pairs of wings to the two orthogonal gimbal axes, respectively;

wherein aerodynamic forces created by movement of the warhead align the wings with the relative wind, thereby causing the penetrator rod to align with the warhead's velocity vector.

4,523,729

RETRIEVING AND/OR LAUNCHING SYSTEM

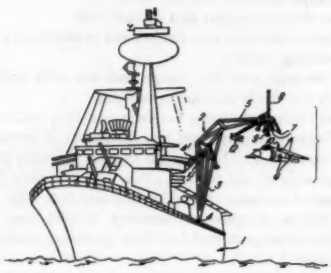
Heinz E. Frick, Storrington, United Kingdom, assignor to British Aerospace Public Limited Company, London, England

Filed Jun. 2, 1982, Ser. No. 384,385

Claims priority, application United Kingdom, Jun. 4, 1981, 8117085

Int. Cl.³ B64F *1/04, 1/12*

U.S. Cl. 244—115 **14 Claims**



1. The method of launching an aircraft in a system for launching and/or retrieving an aircraft, said system including:

(i) gantry means having a base portion for attachment to a surface station and a distal portion,

(ii) a longitudinally extensible member pivotally mounted on said distal portion,

(iii) first actuation means operable to effect extension and contraction of said extensible member,

(iv) second actuation means operable to effect pivotal movement of said extensible member with respect to said distal portion,

(v) first complementary engagement means provided on the end region of said extensible member remote from the distal portion,

(vi) an aircraft capable of hovering in a substantially stationary horizontal position with respect to said gantry means,

(vii) second complementary engagement means provided on the aircraft in the region of its center of gravity adjacent the normal axis of the aircraft and being adapted for releasable engagement with said first complementary engagement means,

(viii) control means for sensing the position of the second complementary engagement means when the aircraft is hovering in a predetermined acquisition region, and for operating said first and second actuation means to guide said first complementary engagement means into engagement with said second complementary engagement means, and

(ix) location means against which the aircraft is drawn for substantially rigid location subsequent to carrying engagement by the complementary engagement means:

the steps comprising:

effecting a flight controllable condition of the aircraft while carried in the gantry means and drawn against the location means;

actuating said first actuation means to cause the aircraft to be lowered to clear the location means while still maintaining the complementary engagement means engaged;

effecting a hovering thrust supported condition of the carried aircraft;

disengaging the complementary engagement means; and

subsequently causing the aircraft to fly clear of the gantry means.

4. A system for launching and/or retrieving an aircraft said system including:

(i) gantry means having a base portion for attachment to a surface station and a distal portion,

(ii) a longitudinally extensible member pivotally mounted on said distal portion,

(iii) first actuation means operable to effect extension and contraction of said extensible member,

(iv) second actuation means operable to effect pivotal movement of said extensible member with respect to said distal portion,

(v) first complementary engagement means provided on the end region of said extensible member remote from the distal portion,

(vi) an aircraft capable of hovering in a substantially stationary horizontal position with respect to said gantry means,

(vii) second complementary engagement means provided on the aircraft in the region of its center of gravity adjacent the normal axis of the aircraft and being adapted for releasable engagement with said first complementary engagement means,

(viii) control means for sensing the position of the second complementary engagement means when the aircraft is hovering in a predetermined acquisition region, and for operating said first and second actuation means to guide said first complementary engagement means into engagement with said second complementary engagement means,

whereby for retrieval of the aircraft, said first complementary engagement means may be brought into releasable aircraft-carrying complementary engagement with said second engagement means, irrespective of the location of the aircraft within said acquisition region, to support a major portion of the weight of the aircraft, and the system being arranged such that a carried aircraft when released by disengagement of the engagement means can adopt an in-flight, self-supported position.

4,523,730

ENERGY-ABSORBING SEAT ARRANGEMENT

John S. Martin, Denham, Near Uxbridge, England, assignor to Engineering Patents and Equipment Limited, St. Peter, Channel Islands

Filed Oct. 25, 1982, Ser. No. 437,361

Claims priority, application United Kingdom, Nov. 2, 1981, 8133001

Int. Cl.³ B64D *25/04*

U.S. Cl. 244—122 R **3 Claims**

1. An energy-absorbing seat arrangement, comprising:

a first structure including two parallel, generally vertical pillars, said pillars being elongated and having axes;

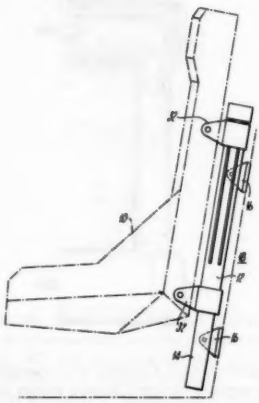
a second structure including a frame mounted for sliding movement on said pillars, said frame having, for each pillar, a respective collar embracing the pillar slidably and a respective portion embracing the pillar slidably at a position spaced apart from the respective collar;

means for affixing a seat pan to one of said structures;

means for affixing the other of said structures to a vehicle; and

connecting means for connecting said first and second structures, said connecting means including at least one plastically deformable metal member arranged to undergo controlled, predetermined plastic deformation, in the event that the force acting between said first and second structures in at least one predetermined direction exceeds a predetermined value, in such a way as to allow controlled, energy-absorbing movement to take place between said structures under action of said force,

wherein said connecting means includes, for each pillar, a respective cap mounted at the end of the pillar so that the axis of the pillar runs through the respective cap, the cap being positioned nearer the respective collar of the frame than the respective portion thereof, and a plurality of respective energy absorbing devices supportively connecting the respective cap and collar, each energy absorbing device being elongated and including a plastically



deformable metal member and a deforming member arranged to prevent sliding movement of said frame longitudinally relative to said pillars in at least one predetermined direction except by drawing of the plastically deformable metal member relative to the deforming member and consequent energy-absorbing deformation of the deformable member by the deforming member, one of said members being secured to said respective cap and the other of said members being secured to said respective collar, said plurality of respective energy absorbing devices being arranged symmetrically about the axis of the pillar and being parallel therewith, so that in the event that the force acting between the pillars and the frame in said predetermined direction parallel with the pillars exceeds a predetermined value, said frame will move slidingly along said pillars so as to draw the collars away from the respective caps and draw the deformable members relative to the deforming members.

4,523,731

EXTERNAL STORE RELEASE FOR FLIGHT VEHICLE

Alan Buitekant, Kent, and David M. Dolliver, Bellevue, both of Wash., assignors to The Boeing Company, Seattle, Wash.

Filed Sep. 28, 1983, Ser. No. 536,893

Int. Cl.³ B64D *1/12*

U.S. Cl. 244—137 R **19 Claims**

1. Apparatus for releasably securing an external store to a flight vehicle, comprising:

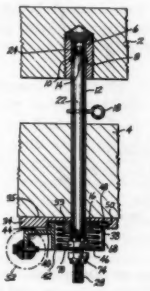
support means for supporting the external store in position relative to the flight vehicle, said support means having an inner end portion releasably attached to the flight vehicle;

a sliding member that is slidable relative to the support means to release the support means from the flight vehicle;

engaging means carried by an outer portion of the support means;

a retainer having a lock position in which a portion of the retainer interlocks with said engaging means to rotatably secure the retainer to the engaging means, and a free position in which the retainer is free to move axially away from the engaging means;

spring means for biasing the retainer axially away from the engaging means;



positioning means for preventing sliding movement of the sliding member relative to the support means when the retainer is secured to the engaging means;

shoulder means carried by the sliding member in the axial path of the retainer; and

actuating means for rotating the retainer from its lock position to its free position to allow the spring means to move the retainer axially away from the engaging means;

wherein when the spring means moves the retainer, the retainer contacts the shoulder means and moves the sliding member to release the support means and allow the support means and the external store to separate from the flight vehicle.

4,523,732

ADJUSTABLE STAND FOR OPTICAL OBSERVATION INSTRUMENTS

Klaus Biber; Karl Grünvogel, both of Aalen; Ulrich Lemcke, Heidenheim; Heinz Jakubowski, and Kurt Schulz, both of Oberkochen, all of Fed. Rep. of Germany, assignors to Carl-Zeiss-Stiftung, Heidenheim/Brenz, Oberkochen, Fed. Rep. of Germany

Filed Sep. 16, 1981, Ser. No. 302,710

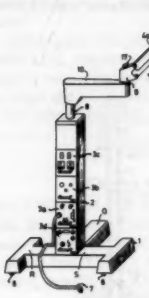
Claims priority, application Fed. Rep. of Germany, Sep. 18, 1980, 3035165

Int. Cl.³ A47F *5/00*

U.S. Cl. 248—123.1 **10 Claims**

1. An adjustable stand having a stand base, a stand column and a support arm for supporting an operation microscope or the like observation instrument, said arm comprising a four-bar linkage establishing a parallelogram wherein (a) a first vertical bar is mounted to said column, (b) a second vertical bar is adapted to support the instrument, and (c) two vertically spaced parallel elongate bars have upper and lower pivoted connections to said vertical bars, spring-anchor means on said first vertical bar and including means for continuously adjustably positioning the same within a limited range of elevations between the elevations of elongate-bar connection thereto, and prestressed spring means connecting said spring-anchor means to said second vertical bar at one to the exclusion of the other of the points of elongate-bar connection to said second vertical bar, whereby said spring means may be essentially fully contained within the geometrical volume generally defined by and

between said elongate bars; whereby for a limited range of elongate-bar angular elevation, said spring means may apply a counterbalancing elevational moment to said linkage, such counterbalancing moment varying as a function of elevation angle; and further whereby, within a limited range of weight of an observation instrument mounted to said second vertical bar, an observation instrument of given weight may be counterbalanced by selectively varied adjustment in the elevational position of said spring-anchor means, said spring-anchor means being adjustably displaceable on said first vertical bar along a straight line which forms an angle of 18° to 24° with the line connecting the upper and lower pivoted connections of said elongate bars to said first vertical bar, whereby adjustment of said spring-anchor means effects a change in moment-arm offset with accompanying relatively small change in spring force.

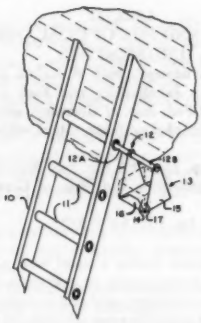


4,523,733

LADDER ATTACHMENT FOR USE BY PAINTERS

Charles K. Lunden, Jr., Box 34, Union, Me. 04862

Filed Sep. 3, 1982, Ser. No. 414,930
Int. Cl.³ E06C 7/14
U.S. Cl. 248—210 **4 Claims**



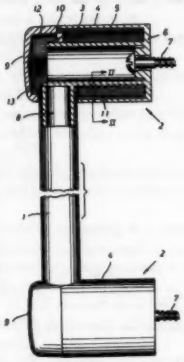
1. An attachment for connecting a container for a liquid to one side of a ladder having tubular metal rungs, said attachment including a rigid member of a length and cross sectional dimensions providing an anchor portion to be freely inserted in a selected end of a selected one of the ladder rungs and a support portion then to extend laterally of the ladder, and a container holder suspended from the support portion said holder including a base and wall structure including opposite portions and rigidly connected thereto to said support portion with the center of gravity of the holder in vertical alignment with a plane inclusive of the mid points of said opposite portions and the center of said base also incusive of the axis of said support portion whereby when a container with liquid therein is connected to the ladder by the insertion of the anchor portion in the selected rung, said anchor portion is held in frictional engagement with the rung and said plane is vertical.

4,523,734

HOLDING DEVICE FOR A SHOWER POST

Klaus Grohe, Schiltach, Fed. Rep. of Germany, assignor to Hans Grohe GmbH & Co. KG, Fed. Rep. of Germany

Filed Aug. 5, 1983, Ser. No. 520,713
Claims priority, application Fed. Rep. of Germany, Sep. 9, 1982, 3233495
Int. Cl.³ A47H 1/14
U.S. Cl. 248—251 **10 Claims**



1. A holding device for a shower post, comprising:
at least one support member, having means for receiving a fixing element adapted for connection to a wall, and means for receiving the shower post, the support member spacing the shower post at a distance from the wall;
a sleeve surrounding the support member and spaced from the support member, the sleeve being made from a transparent material and the sleeve having roughened inner surface, whereby the holding device appears to assume the color of the wall.

4,523,735

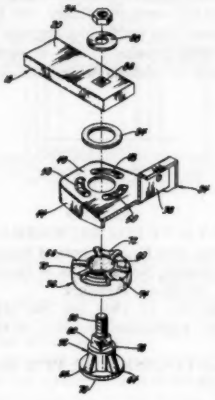
MIRROR SWING LOCK MECHANISM

Marlin E. Beck, Allentown, and Robert W. McFarland, Pennsburg, both of Pa., assignors to Delbar Products, Inc., Perkasie, Pa.

Filed Jan. 30, 1984, Ser. No. 574,981
Int. Cl.³ A47G 1/24
U.S. Cl. 248—476 **16 Claims**

1. A mirror swing lock mechanism of the type comprising a bracket member (24) including a first portion (38) adapted to be secured to an exterior surface of a vehicle and a second portion (42) projecting laterally from said first portion, a mirror head supporting arm (18), a mirror head (14) adjustably supported upon said arm, pivot means (32) for securing one end of said arm to the second portion of said bracket member to allow said arm to swing relative to said bracket member and a detent mechanism for releasably retaining said arm in a position extending laterally outwardly from said bracket member for normal rearward viewing, the improved detent mechanism comprising:
(a) the second portion of said bracket member including
(i) an opening (46) formed therethrough;
(ii) first detent means (48, 50, 52) disposed about said opening;
(b) a spring member (36) including

(i) a central opening (60) formed therethrough;
(ii) a surface (66) having second detent means (70, 72, 74) formed therein;
(c) said pivot means including
(i) a head portion (76) adapted to support said spring member such that the first and second detent means are in a juxtaposed relationship;
(ii) a stud portion (78, 80) projecting from said head portion and extending through the openings in said spring member and the bracket member;



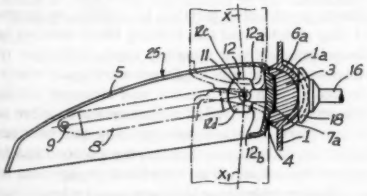
(iii) means (80, 86) for engaging said stud portion to said mirror head supporting arm for rotation therewith; and
(iv) means (62, 64) interlocking said stud portion and spring member for rotation together;
the first and second detent means being oriented such that when they are in a nesting relationship the mirror supporting arm is in its laterally outwardly extending position for normal rearward viewing, rotation of said arm from said laterally outwardly extending position imparting rotation to the stud portion to move the second detent means out of nesting engagement with the first detent means.

4,523,736

DEVICE FOR MOUNTING A REARVIEW MIRROR CASING ON A SUPPORT MEMBER

Stéphane Manzoni, Saint-Claude, France, assignor to Societe Manzoni-Bouchot, Saint-Claude, France

Filed Mar. 2, 1982, Ser. No. 354,106
Int. Cl.³ B60R 1/02
U.S. Cl. 248—483 **20 Claims**



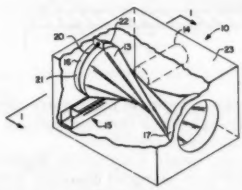
1. A rearview mirror assembly for a vehicle, said rearview assembly comprising:
a casing having a longitudinal axis and an interior cavity;
a convex face on said casing extending generally transversely relative to said longitudinal axis;
support means adapted for rigid interconnection with said vehicle;
a concave face on said support means selectively engageable with said convex face of said casing;
first mechanical engaging means on said convex face;
second mechanical engaging means on said concave face and selctively engageable with said first mechanical engaging means in a first predetermined angular position of said casing relative to said support means to inhibit relative rotation therebetween, said longitudinal axis generally extending away from said vehicle in said first predetermined angular position;
an opening in said convex face;
a fastening member fixedly interconnected with said support means and extending therefrom through said opening in said convex face into said interior cavity of said casing; and
first biasing means disposed within said interior of said casing and mechanically interposed said casing and said fastening member, said first biasing means having a first end interconnected with said fastening member and a second end extending generally along said longitudinal axis therefrom and interconnected with a portion of said casing remote from said fastening member such that said first biasing means exerts a force generally along said longitudinal axis of said casing and further such that said first biasing means biases said first and second mechanical engaging means into engagement in said first predetermined angular position such as to inhibit rotation therefrom but permit rotation therefrom in response to the application of a torque on said casing in excess of a predetermined torque level.

4,523,737

SLEEVE VALVE ACTUATOR MEANS

Milo R. Wentworth, Deerfield, Ill., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Mar. 21, 1983, Ser. No. 476,953
Int. Cl.³ F16K 7/06
U.S. Cl. 251—4 **7 Claims**



1. Actuator means adapted to control a sleeve type of valve having a first generally round end that rotates relative to a second end to cause said valve to be operated between an open position and a closed position, including: fluid pressure operated motor means having output means including a piston driven shaft providing a linear motion; flexible cable means having a first end fixed to said first end of said valve and having a portion of said cable means lying along an outer surface of said first end of said valve; said cable means having a second end attached to said motor output means; said motor means including mounting means to mount said motor means adjacent said valve with said motor output means positioned to provide said linear motion at a generally right angle to a center line of said valve to cause said first end of said valve to rotate with respect to said second end by said cable means winding or unwinding along said outer surface of said valve; said motor output means further including two relatively moveable members; a first of said relatively moveable members having center roller means ridgedly attached thereto; a second of said relatively moveable members being moveable with respect to said first moveable member and including two idler roller means

with one each of said two idler roller means being attached to said second of said relatively moveable members on opposite sides of said center roller means; said center roller means moving differentially with respect to said idler roller means when said moveable members are moved with respect to each other; said cable means further including two cable portions; a first of said cable portions being connected to said first relatively moveable member and said first valve end after partially encircling said center roller means and a first of said two idler roller means; and a second of said cable portions being connected to said first relatively moveable member and said first valve end after partially encircling said center roller means and a second of said two idler roller means; said cable portions being arranged to cause said first valve end to rotate as said relatively moveable members are moved relative to each other by said motor means with said cable portions being differentially wound or unwound around said outer surface of said first valve end.

4,523,738

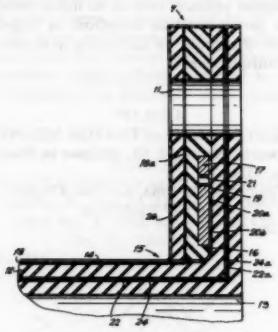
DEFORMABLE SLEEVE FOR A PINCH VALVE

Spiros G. Raftis, Pittsburgh, Pa., and George Merritt, Uniontown, Ohio, assignors to Red Valve Co. Inc., Carnegie, Pa.

Continuation-in-part of Ser. No. 354,939, Mar. 5, 1982, abandoned. This application Jun. 27, 1984, Ser. No. 624,973

Int. Cl.³ F16L *55/14*

U.S. Cl. 251—4 **13 Claims**



1. A high-pressure-resistant pinch valve sleeve for use in a pinch valve through which flowable media at relatively high pressures are conveyed, comprising:

(a) an elongated tubular body having opposite end portions, said tubular body having an elastically yieldable side wall which is radially inwardly deformable from an initial shape in response to the application of radially inwardly-directed external forces to its exterior during pinch valve operation, said side wall also being resiliently restorable to its initial shape upon removal of said external forces and in response to the conveyance of high-pressure media through the interior of the tubular body during pinch valve operation;

(b) a pair of end flanges each having a plurality of openings therethrough, each flange being integral with one of said end portions of said tubular body and extending radially outwardly therefrom;

(c) a mesh element having an elongated tubular sheath portion having opposite end portions, said tubular sheath portion being movable with and confining said tubular body between said end portions of the latter for preventing the tubular body from bulging outwardly under the influence of said high-pressure media while offering acceptable resistance to said external forces, said mesh element having a pair of anchoring portions at said opposite end portions of said tubular sheath portion, each anchoring portion having a major surface which extends at least in part radially outwardly from said tubular sheath portion; and

(d) means for anchoring said anchoring portions to said end flanges, said anchoring means including an annular disc anchoring element at each of said end flanges and rigidly attached thereto and embedded therein, each anchoring element having a major surface which extends at least in part radially outwardly from said tubular sheath portion and which respectively lies in juxtaposition with said major surface of each anchoring portion, each anchoring element being fully situated radially inwardly of said openings of the respective flange, and means including a welded connection for connecting said major surface of each anchoring portion to said respectively juxtaposed major surface of each anchoring element.

4,523,739

MAGNETIC VALVE FOR REFRIGERATION PLANT

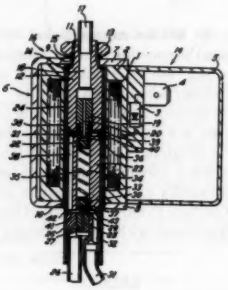
Claus J. Johansen; Jens K. Jark, both of Sonderborg, and Thorvardur S. Stefansson, Nordborg, all of Denmark, assignors to Danfoss A/S, Nordborg, Denmark

Filed Apr. 11, 1984, Ser. No. 598,716

Claims priority, application Fed. Rep. of Germany, Apr. 22, 1983, 3314722

Int. Cl.³ F16K *31/02*; F17D *00/00*

U.S. Cl. 251—139 **9 Claims**



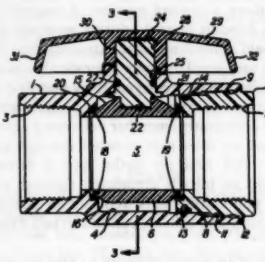
1. A magnetic valve for a refrigerator plant, comprising, a magnetic coil unit having a central bore, a plug member of magnetic material projecting into said bore, a yoke, resilient means connecting said plug member to said yoke to provide for cushioned relative movement therebetween, a housing block member mounted in fixed relation to said coil unit and in spaced relation to said plug member to provide an armature space, said plug member and said housing block member having end faces bounding said armature space, a plunger type armature disposed in said bore in said armature space where its stroke is limited at both ends thereof, said armature having a first end face magnetically pulled against said plug when said coil unit is energized, return means opposing said energizing force of said coil unit, said armature having a second end face at the other end thereof which is pushed into engagement with said housing block member by said return means when said coil unit is de-energized, valve seat and valve seat closure means associated with at least one end of said armature and at least one of said members, a layer of refrigerant-proof plastics such as polytetrafluoroethylene forming one of said end faces of the engaging end faces between said plug member and said armature.

4,523,740

ROTATABLE UNITARY BALL VALVE

Harold Paitchell, Elizabeth, N.J., assignor to Hayward Industries, Elizabeth, N.J.

Continuation of Ser. No. 307,411, Oct. 1, 1981, abandoned. This application Apr. 12, 1983, Ser. No. 484,385
Int. Cl.[3] F16K *27/06*
U.S. Cl. 251—315 11 Claims



1. A rotatable unitary ball valve comprising, in combination:
(1) a unitary valve housing of plastic material defining a ball valve chamber, intercommunicating first and second fluid ports and first and second fluid passages, and a threaded end connector socket in one passage;
(2) an externally threaded end connector threadably engaged in the threaded end connector socket and permanently fixed therein by fused integration of the threads thereof with the valve housing and adapted for attachment to a fluid line; and the other fluid passage being adapted for attachment to a fluid line;
(3) a ball valve having a through fluid passage intercommunicating the first and second fluid passages of the valve housing only in the open position of the valve, and disposed in the valve chamber for rotation between open and closed positions; closing off intercommunication between the first and second fluid passages via the ball valve chamber and the ball valve through fluid passages in the closed position, and making such intercommunication in the open position;
(4) at least one sealing means sealingly disposed between the ball valve and the valve chamber wall, maintining a fluid-tight seal therewith at least in the closed position of the valve; and
(5) means extending to the outside of the valve housing for rotating the valve between open and closed positions.

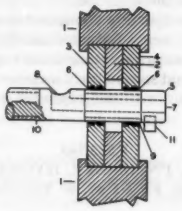
4,523,741

LINEAR MOTION VALVE

Joseph A. Chandler, Dickinson, Tex., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Jul. 31, 1984, Ser. No. 636,465
Int. Cl.[3] F16K *3/24*
U.S. Cl. 251—325 5 Claims

1. A linear motion valve comprising, in combination, a cylindrical valve spool slideably disposed in a valve sealing assembly, said valve spool being constructed of nonmagnetic material encircled with at least two separate and axially spaced apart rings of magnetically permeable material, said valve spool being capable of being positioned such that any of said rings is in sealing relationship with the valve sealing assembly, said valve sealing assembly comprising two magnetically permeable pole pieces, one end of each being in a magnetic relationship with opposite poles of a magnet and the other end of each being in a close noncontacting relationship to a magnetically permeable ring on the valve spool so as to provide a gap between said pole pieces and said magnetically permeable ring,



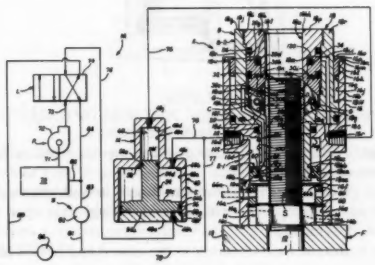
and said gap containing a ferrofluid to provide an effective seal.

4,523,742

APPARATUS FOR TENSIONING A STUD AND METHOD OF DOING SAME

Bobby J. Reneau, Houston, Tex., assignor to Gripper, Inc., Houston, Tex.

Continuation-in-part of Ser. No. 342,235, Jan. 25, 1982, Pat. No. 4,438,901. This application Jul. 19, 1983, Ser. No. 515,285
Int. Cl.[3] E21B *19/00*
U.S. Cl. 254—29 A 17 Claims



1. An apparatus for tensioning a stud extending from a surface, comprising:
a body adapted to be removably mounted about the stud extending from the surface, said body including a first body member and a second body member;
said first body member having a surface engaging end and a chamber end, said surface engaging end for engaging the surface and said chamber end for receiving said second body member;
said second body member having a stud bore therethrough adapted to receive the stud therein:
gripper means surrounding said stud bore of said second body member for gripping the stud;
low pressure force means acting within said body on said gripper means for retaining said second body member in a contracted position where said second body member is contracted into said first body member when said apparatus is mounted on a stud and for moving said gripper means to a retracted position from said stud bore thereby facilitating mounting of said tensioner on said stud;
high pressure force means acting within said body on said gripper means for overpowering the effects of said low pressure force means and moving said gripper means and said second body member, said high pressure force means moving said gripper means from said retracted position to an engaging position in engagement with the stud, and as a result of the pressure buildup when said gripper means is in the engaging position said high pressure force means

moving said second body member from a contracted position, wherein said gripper means is in said engaging position to an expanded position wherein said gripper means tensions the stud; and,

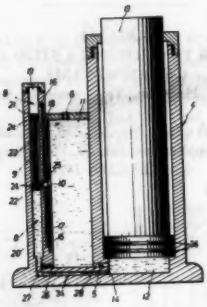
regulation means operably connected to said high and low pressure force means for automatically regulating radial movement of said gripper means into engagement with the stud prior to said second body member moving from said contracted position to said expanded position.

4,523,743

AUTOMATIC PNEUMATIC HYDRAULIC JACK

Tweng-Huang Wang, Fl. 3-1 no. 80 Hsi-Ning N. Rd., Taipei, Taiwan

Filed Jan. 19, 1983, Ser. No. 459,336
Int. Cl.³ B66F *3/24*
U.S. Cl. 254—93 H **4 Claims**



1. An automatic hydraulic jack comprising:

a large cylinder having a closed end an open end and an inner diameter;

a large piston operably slidably mounted in said large cylinder adapted to protrude at one end through said open end of said cylinder;

a first hydraulic fluid chamber at the closed end of said large cylinder;

hydraulic fluid in said first chamber;

a hydraulic fluid storage tank containing hydraulic fluid;

a first hydraulic fluid flow channel connecting said first chamber with said storage tank;

a manually operated valve in said first flow channel to close said channel during operation of the jack and open said channel after use thereof;

a small cylinder closed at both ends having an inner diameter substantially smaller than the inner diameter of said large cylinder;

a small piston slidably mounted in said small cylinder to reciprocate therein between top and bottom dead center positions comprised of a first end, a second end and a connection rod between said first and second ends holding said first and second ends in spaced relationship with respect to each other and having an outer diameter smaller than the inner diameter of said small cylinder to form an annular chamber between said ends;

an air chamber between said first end of said small piston and the respective end of said small cylinder;

a second hydraulic fluid chamber containing hydraulic fluid between said second end of said small piston and the respective end of said small cylinder;

a second hydraulic fluid flow channel connecting said second chamber to said storage tank;

a one-way valve in said second flow channel adapted to allow fluid from said storage tank to flow into said second chamber;

a third hydraulic fluid flow channel connecting said second chamber to said first chamber;

a one-way valve in said third flow channel adapted to allow hydraulic fluid to flow from said second chamber into said first chamber;

an airflow control valve means operatively mounted adjacent said small cylinder having an air inlet, a first air outlet connected to said air chamber, a second air outlet connected to said storage tank, an exhaust outlet connected to the atmosphere, a control member, a control conduit and an exhaust conduit in said control member, and shifting means on said control member extending into said annular chamber in said small cylinder operatively associated with said small piston to be engageable by said first and second ends thereof as said small piston reciprocates to alternately shift said control member between a power position wherein said air inlet is connected through said control conduit to said first air outlet and a return position wherein said air inlet is connected through said control conduit to said storage tank and said air chamber is connected through said exhaust conduit to said exhaust outlet; and

means to supply air under pressure to said air inlet;

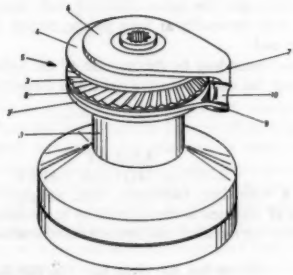
so that when said small piston is at top dead center said control member is in the power position and directs pressurized air into said air chamber to drive said small piston in a power stroke to displace hydraulic fluid from said second fluid chamber into said first fluid chamber to operate said large piston, and when said small piston is at bottom dead center said control member is shifted into the return position to direct pressurized air into said storage tank to drive said small piston in a return stroke toward top dead center where said control member is again shifted into a raising position to again operate said large piston.

4,523,744

WINCH FOR SHEET WINDING ON SEACRAFTS

Luciano Bonassi, Via Filippo Reina 33, 21047 Saronno, Italy

Filed Sep. 29, 1982, Ser. No. 427,269
Claims priority, application Italy, Oct. 15, 1981, 23224/81[U]
Int. Cl.³ B66D *1/74*
U.S. Cl. 254—371 **4 Claims**



1. A winch for sheet winding on seacrafts, comprising,

a fixed mount;

a drum for sheet winding;

means including a rotatable shaft for operationally rotating said drum;

a pair of blocking rings operationally connected to said drum, said pair of blocking rings forming therebetween a groove having an axis extending in a predetermined plane and arranged to grasp and grab the sheet into rotation when the sheet is under stress;

a roller for passing thereover the sheet coming from said drum and directed to said groove or vice versa, said roller

having an axis which extends in a plane substantially corresponding to said plane of said axis of said groove and is slanted to said plane of said axis of said groove at a small angle, so that when the sheet passes from said groove to said roller the sheet reaches the roller in direction almost perpendicular to said plane of said axis of said roller;

and means for supporting said roller including an upper and a lower annular plate each respectively containing a jutting portion having a hole, said upper annular plate being disposed in an upper part of said groove and said lower annular plate being disposed below said groove, said supporting means further including a plug-pin having a pin axis and a nose retained in said hole of said jutting portion of said upper annular plate, said upper jutting portion having a plane surface disposed perpendicular to said pin axis of said plug-pin, said roller being turnable around said plug-pin.

4,523,745

PROTECTOR FOR LAZY-TONG FENCE

David L. Killman, Atascadero, and Loraine C. Killman, both of 10685 Colorado Rd., Atascadero, Calif. 93422

Filed Jan. 27, 1983, Ser. No. 461,558

Int. Cl.³ E04H *17/00*

U.S. Cl. 256—1 **12 Claims**

1. An article for protecting a child from accidental injurious contact with an upwardly pointing vertex formed by two legs of a lazy-tong fence, comprising in combination:

(a) pocket-shaped means resilient enough to yield when bumped and to return to its original shape after being bumped and shaped to fit loosely over and to cover the vertex of the lazy-tong fence; and,

(b) attaching means connected to said pocket-shaped means and extending between the legs of said lazy-tong fence below the vertex for securing said pocket-shaped means onto the vertex.

4,523,746

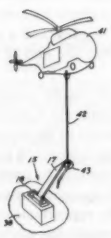
LOAD PICKUP COUPLING DEVICE AND METHOD

Claude L. Chapman, 3300 W. Union Ave., Englewood, Colo. 80110

Division of Ser. No. 154,878, May 30, 1980, Pat. No. 4,348,009. This application Aug. 4, 1982, Ser. No. 405,168

Int. Cl.³ B64D *1/22*

U.S. Cl. 258—1.2 **16 Claims**



16. A method of performing repeated hookups with and disengagements from a hoist line carried by an aircraft comprising the steps of:

flying a hoist line having an end member toward a hookup device including an arm having an outline as viewed from the top that defines a target area with an opening for the entry and exit of the hoist line;

moving the hoist line through said opening, along a guide surface of said arm, and into a retainer portion of said arm, said retainer portion being narrower than said end member so that said end member cannot pass through said retainer portion;

moving said end member up against the bottom of said retainer portion and raising said arm from a ready position to a raised suspended position to effect a connection between said hoist line and arm in which an end portion of the hoist line adjacent the end member extends around said retainer portion and the end member, due to its size, is prevented from pulling through said retainer portion and to suspend the hookup device from the aircraft;

flying the hookup device to a second location and positioning the device so that it is supported from below with said arm returning to said ready position; and

dropping the end member out of the retainer portion and passing said hoist line through the exit opening to disengage the hoist line from the arm means.

4,523,747

DISCHARGING MOLTEN METAL FROM A SMELTING FURNACE

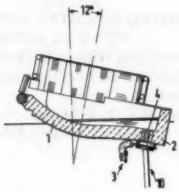
Heinrich Schnitzer, Rheinberg, and Bodo Wronka, Duisburg, both of Fed. Rep. of Germany, assignors to Mannesmann Ag, Duesseldorf, Fed. Rep. of Germany

Filed Sep. 12, 1983, Ser. No. 531,055

Claims priority, application Fed. Rep. of Germany, Jun. 15, 1983, 3321576

Int. Cl.³ C21B *15/00*

U.S. Cl. 266—44 **10 Claims**



1. Method of discharging a metallurgical smelting furnace under avoidance of slag inclusion in the outflow of molten metal wherein the furnace is provided with an external bottom outlet comprising the steps of

providing a surface ratio in the furnace of water cooled surface area to fire proof refractory surface area in the range from 6:1 to 9:1;

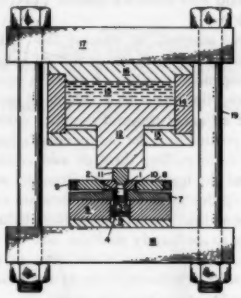
tilting the furnace by an angle that increases from zero to not more than 15° to maintain an uncritical level of molten metal above the outlet; and

tilting the furnace back and towards an opposite tilt of not more than −6°, toward the end of the discharge so that residual molten metal and slag layer floating thereon will flow away from the outlet.

4,523,748
VERY HIGH PRESSURE APPARATUS FOR QUENCHING

Richard Latter, Burke, Va., assignor to R & D Associates, Marina del Rey, Calif.

Filed Sep. 2, 1983, Ser. No. 529,020
Int. Cl.³ C21D *9/00*
U.S. Cl. 266—249 **16 Claims**



1. A high pressure quenching apparatus for rapidly decompressing materials so that they remain in metastable states comprising:

means for applying high pressure above 10,000 bars to a sample including:

a press, first and second opposed rams, a preloaded cylindrical pressure vessel, a sample compartment formed by a piston operating in the bore of said pressure vessel;

means for rapidly breaking the continuity of the pathway by which pressure is transmitted from the two rams to the sample compartment, to release the pressure on said sample at a rate equal to or above ten million bars per second;

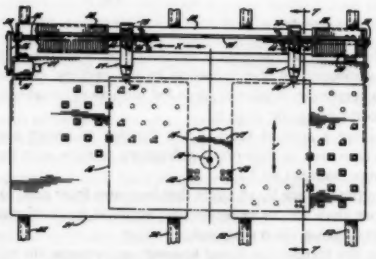
said means for breaking the continuity including a frangible member;

the first one of said rams being substantially smaller and lighter than the other, wherein hydraulic fluid is included in the pressure transmitting pathway to said first ram, and means is provided for mounting said frangible member in confining relationship with respect to said hydraulic fluid.

4,523,749
HOLE FORMING MACHINE WITH ADJUSTABLE WORK CLAMPS

Lee Kindgren, Rockford; William B. Scott, Rochelle, and Robert W. Voges, Rockford, all of Ill., assignors to W. A. Whitney Corp., Rockford, Ill.

Filed Mar. 2, 1983, Ser. No. 471,446
Int. Cl.³ B23Q *3/08*
U.S. Cl. 269—32 **8 Claims**

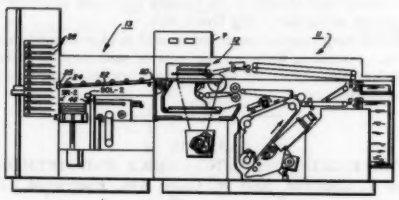


1. A machine having a tool for forming holes in a substantially flat and horizontal work sheet, said machine comprising a base, a carriage selectively movable back and forth relative to said base along an X-axis, first and second laterally spaced clamps normally movable with said carriage and adapted to selectively grip and release one edge portion of the work sheet, said clamps re-positioning said work sheet along said X-axis relative to said tool when said clamps grip said work sheet and move laterally with said carriage, the improvement in said machine comprising, first and second power-operated actuators movable with said first and second clamps, respectively, each actuator being selectively operable to lock the respective clamp to said carriage for lateral movement therewith or to release such clamp from the carriage to permit the carriage to move relative to such clamp, means fixed along the X-axis so that the carriage is movable relative to said fixed means, and selectively operable power-operated means cooperating with said fixed means for holding each clamp in a stationary position along the X-axis when such clamp is released from the carriage whereby the carriage may be moved relative to such clamp in a stationary position to permit such clamp to be re-positioned along the carriage.

4,523,750
COPIER/DUPLICATOR WITH FINISHING APPARATUS HAVING LOW STAPLE CONTROL FEATURES

Lawrence C. Hubler, Fairport, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Aug. 30, 1984, Ser. No. 645,645
Int. Cl.³ B42B *1/02*; B27F *7/06*
U.S. Cl. 270—53 **4 Claims**



1. In a copier having a programmer for controlling a reproduction run of a preset number of stapled copy sets, and including a stapling apparatus having a clamping/stapling position whereat a plurality of sheets to be stapled are clamped preparatory to the application of a staple thereat, a magazine for holding one or more sticks of staples, and a staple follower within the magazine for contacting the end of a stick, the improvement comprising:

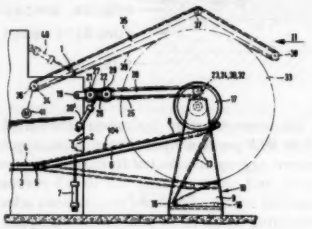
means for sensing a low staple condition in the magazine when there is approximately a predetermined number of staples remaining therein to be consumed,

said sensing means being connected to the programmer and being cooperative therewith to permit continuation of the reproduction run and operation of said drive means until a specific segment of the reproduction run is completed, the programmer, upon completion of the segment, causing the copier to assume a standby condition and to hold the count of the number of copy sets produced after said specific segment of the run has been completed.

4,523,751
APPARATUS FOR CONVOLUTING SHEETS OF PAPER ON A CORE

Peter Merkli, Oftringen, Switzerland, assignor to GRAPHA-Holding AG, Hergiswil, Switzerland

Filed Aug. 8, 1984, Ser. No. 638,888
Claims priority, application Switzerland, Aug. 23, 1983, 4578/83
Int. Cl.³ B65H *39/08*; B65B *63/04*
U.S. Cl. 270—60 10 Claims

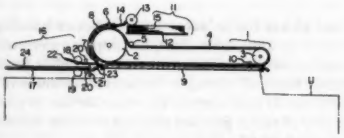


1. Apparatus for converting a succession of sheets into a roll of convoluted sheets, comprising axially spaced apart first and second rotary cores; an elongated band having first and second end portions connected to the respective cores and an intermediate portion; guide means for directing a part of said intermediate portion substantially tangentially of said first core; means for rotating said cores independently of one another so that each of said cores winds the band therearound while rotating in a direction to collect the band; and means for supplying the sheets onto said intermediate portion of the band while said first core rotates in a direction to collect the band so that the sheets are confined between the convolutions of the band on said first core.

4,523,752
ORIGINAL DOCUMENT INSERTING DEVICE FOR COPYING APPARATUS

Shuji Kigawa, and Eiji Otake, both of Hachioji, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 169,147, Jul. 15, 1980, abandoned. This application Jul. 15, 1983, Ser. No. 513,785
Claims priority, application Japan, Jul. 23, 1979, 54-92669
Int. Cl.³ B65H *3/44*
U.S. Cl. 271—9 5 Claims



1. An original document feeding device to be used for a copying apparatus, comprising:

(a) automatic feed means for successively feeding the uppermost one of original documents stacked face up on a base;

(b) alternate feed means for individually feeding an original document inserted therein;

(c) transport means for conveying each fed original document to a projection station for copying and for discharging a previous original document at said projection station;

(d) an automatic copy actuator for providing a series of signals for operating successive copying cycles of said copying apparatus;

(e) an alternate feed detector for providing an interrupt signal upon detection of an original document inserted in said alternate feed means;

(f) a copy position detector for detecting the position of an original document transported by said transport means to said projection station;

(g) first circuit means responsive to said signals of said actuator for successively actuating said automatic feed means, and responsive to an interrupt signal of said alternate feed detector to interrupt actuation of said automatic feed means and actuate said alternate feed means in priority over said automatic feed means; and

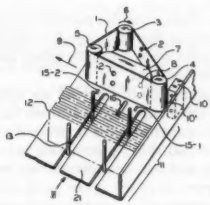
(h) second circuit means responsive to said signals of said actuator for successively actuating said transport means, and responsive to said copy position detector for stopping said transport means upon transport of each original document to said projection station for copying,

whereby successive cycles of copying from said stacked original documents are automatically effected and said successive cycles may be interrupted at any point for copying an individually inserted original document.

4,523,753
APPARATUS FOR FEEDING FLAT ARTICLES

Kunio Hiromori, and Kiyoshi Tsuda, both of Tokyo, Japan, assignors to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Oct. 13, 1982, Ser. No. 433,980
Claims priority, application Japan, Oct. 14, 1981, 56-152745[U]
Int. Cl.³ B65H *3/08*
U.S. Cl. 271—31.1 3 Claims



1. An apparatus for feeding flat articles comprising:

hopper means for storing flat articles in an upright position;

feeding means at the edge of said hopper means for picking up and feeding the flat articles stored in said hopper means, one by one;

a plurality of detection means, each for detecting the pack density of the flat articles stored in said hopper means, said plurality of detection means being located at different positions which are longitudinally distributed away from the pick up position of said feeding means, said different positions also being distributed in a longitudinal direction of the flat articles stored in said hopper means; and

transfer means responsive to said plurality of detection means for transferring said flat articles stored in said hooper means to said feeding means.

4,523,754

PAPER GUIDING DEVICE IN A COPYING APPARATUS

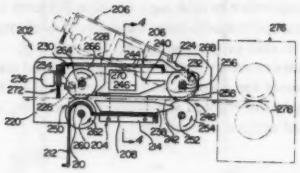
Masahiko Hisajima, Osaka; Hiroshi Kimura, Habikino; Yutaka Shigemura, Takarazuka; Isao Yada, Neyagawa; Yoichiro Irie, Suita; Kiyoshi Morimoto, Osaka, and Takashi Nagashima, Neyagawa, all of Japan, assignors to Mita Industrial Co., Ltd., Japan

Division of Ser. No. 349,544, Feb. 17, 1982,. This application Nov. 23, 1983, Ser. No. 554,644

Claims priority, application Japan, Mar. 2, 1981, 56-28445; Mar. 10, 1981, 56-32265[U]; Mar. 10, 1981, 56-32266[U]

Int. Cl.³ B65H *5/38*

U.S. Cl. 271—264 3 Claims



1. In an improved copying paper guiding device including, in opposition, a lower guide plate having a main flat portion and an upper guide plate having a main flat portion, the improvement comprising:

a plurality of rising pieces having top edges and being laterally spaced-apart upon the upper side of the main flat portion of the lower guide plate, said rising pieces rising above the lower guide plate and extending in the direction of movement of copying paper being guided through the improved guiding device; and

a plurality of hanging pieces having lower edges and being laterally spaced-apart on the lower side of the main flat portion of the upper guide plate, said hanging pieces hanging from the upper guide plate and extending in said direction of movement of copying paper;

said top edges of said rising pieces and said lower edges of said hanging pieces defining a path of movement of the copying paper through the improved guiding device, each of said top edges and said lower edges having minimal contact with the copying paper during movement along said path; and

said upper guide plate main flat portion having a plurality of openings extending therethrough for dissipating heat from the copying paper away from the paper and the improved paper guide device; and

each of said hanging pieces having an opening extending therethrough for dissipating heat from the copying paper away from the paper and the improved guiding device;

said top edges of said rising pieces, said lower edges of said hanging pieces and said heat dissipating openings through the main flat portion of the upper guide plate and through each of said hanging pieces substantially preventing accumulation of moisture on the copying paper and on the improved copying paper guiding device.

4,523,755

SURFACE FOR SPORTS AREAS, PARTICULARLY TENNIS COURTS, AND ITS MANUFACTURE

Egon Turba, Rothwiese 39, 8122 Penzberg, Fed. Rep. of Germany

Filed May 28, 1981, Ser. No. 268,105

Int. Cl.³ A63C *19/02;* C04B *31/20, 13/00;* E01C *13/00*

U.S. Cl. 272—3 16 Claims

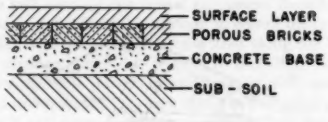
1. A process for the manufacture of a surface for a sports area, such as a tennis court, characterized by applying a layer of a non-hydrated mixture consisting essentially of tile cement, brick dust and other powdered, non-hydrated and non-hydratable mineral material on a prepared, essentially level horizontal foundation and then hydrating the tile cement in situ in said layer; in that the non-hydrated mixture is formed in situ on said foundation by the steps comprising:

(a) preparing an intimate dry powder mixture of the components brick dust, other powdered, non-hydrated and non-hydratable mineral material, and dry tile cement;

(b) spreading said dry powder mixture on said foundation;

(c) compacting said layer of powder mixture; and

(d) applying the necessary amount of water; and



in that the tile cement before hydration consists of approximately 24.8 to 89.8 percent hydraulic cement, approximately 10 to 75 percent aggregate selected from sand or ground limestone, or both, and approximately 0.2 to 6.5 percent methyl cellulose together with one or more components selected from the class consisting of up to 10 percent interpolymer of vinyl chloride and vinyl propionate, up to 6 percent condensation product of melamin formaldehyde, up to 0.1 percent polyacrylamide, up to 25 percent trass, and up to 5 percent fibrous material.

4,523,756

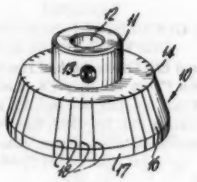
BALL KICKER

Thomas M. Camilleri, 277 Ave. W, Brooklyn, N.Y. 11223

Continuation-in-part of Ser. No. 958,717, Nov. 8, 1978, abandoned, which is a continuation-in-part of Ser. No. 769,410, Feb. 17, 1977, abandoned, which is a continuation-in-part of Ser. No. 622,234, Oct. 14, 1975, abandoned. This application May 22, 1980, Ser. No. 152,338

Int. Cl.³ A63D *5/02*

U.S. Cl. 273—49 9 Claims



1. In a ball kicker for an automatic pinspotter bowling machine mounted on a movable shaft, the improvement wherein the outer surface which contacts the bowling ball is formed of an elastomeric material having a durometer hardness of from about 35 to about 45 and wherein the outer surface is provided with a plurality of radial grooves adapted to move the bowling ball both when dry and when coated with oil.

4,523,757

BOWLING BALL WEIGHT EXCHANGER

Robert C. Swett, and Richard E. Swett, both of 1074 Strong St., Schenectady, N.Y. 12307

Filed May 31, 1983, Ser. No. 499,372

Int. Cl.³ A63B *37/10*

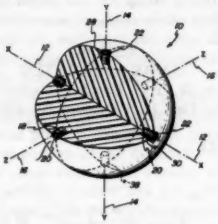
U.S. Cl. 273—63 E 5 Claims

1. An improved bowling ball for use in determining the most beneficial internal ball weight distributions for a particular bowler's style comprising:

a bowling ball having mutually perpendicular x, y and z axes emanating outwardly from the center of the ball; and

at least six weight receptables, one at each of the intersec-

tions of said axes and the exterior surface of the bowling ball, each receptable containing an internally threaded



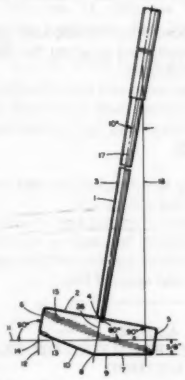
cylinder secured to the inner surface of the receptacle and adapted to receive an insert of predetermined weight for creating various weight imbalances within the ball.

4,523,758

GOLF CLUB PUTTER

Fred W. Guendling, Jr., 19904 Center St., Box 443, Mokena, Ill. 60448

Filed May 2, 1983, Ser. No. 490,285
Int. Cl.³ A63B *53/00*
U.S. Cl. 273—77 R **3 Claims**



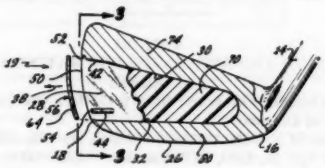
1. A golf club for use as a putter comprising a club head and a club shaft connected thereto, said club head including a heel portion at one side edge thereof, a toe portion at the opposite side edge thereof, a flat sole portion along a bottom edge thereof extending from said heel portion toward said toe portion and terminating at an intermediate point between said heel portion and said toe portion, a planar striking surface on said club head between said heel portion and said toe portion and above said sole portion, said flat sole portion of said club head having a planar surface which is substantially normal to said planar striking surface, a reference line above said flat sole portion and parallel to its said bottom edge a distance of five eights of an inch, said reference line being horizontal to the ground when said flat sole portion is lying flat on the ground, the longitudinal axis of said club shaft connected to said club head diverging from the vertical by at least ten degrees in relation to said horizontal reference line when said sole portion of said club head is lying flat on the ground, said club shaft being connected to said club head at substantially the midpoint of said club head between said heel portion and said toe portion, said club shaft extending in a substantially straight line from said club head to the outer free end of said club shaft, said planar striking surface of said club head lies in a first plane, said longitudinal axis of said club shaft lies in a second plane, said second plane being substantially parallel to said first plane, said club head including a back portion extending between said opposite side edges thereof, said back portion being spaced apart from said striking surface of said club head a distance which is less than the lateral distance across said club head between said heel portion and said toe portion, wherein the lower edge of said club head includes a laterally sloping edge extending laterally from said sole portion at said intermediate termination point upwardly and laterally therefrom to said toe portion of said club head, the upper edge of said club head extending at a fixed substantially right angle to said longitudinal axis of said club shaft on both sides thereof.

4,523,759

GOLF CLUB

Lawrence Y. Igarashi, 27171 Hidden Trail Rd., Laguna Hills, Calif. 92653

Filed May 11, 1983, Ser. No. 493,732
Int. Cl.³ A63B *53/08, 53/06*
U.S. Cl. 273—169 **5 Claims**



1. A metal iron type golf club designed for minimizing offsets from the center of moments and torque when the club strikes a ball comprising:

a golf club having a heel and toe wherein the heel has a hosel extending therefrom adapted to receive a shaft therein:

a cavity within said club surrounded by at least a portion of the metal weight of said club established within a perimeter region outside of said cavity and wherein said perimeter region and said cavity extend from said toe toward said heel in a diminishing manner as to its overall cross sectional size and said cavity is closed from communication with said hosel;

means for closing said cavity formed as a plate welded to said club and overlying said cavity formed with an opening therethrough passing into said cavity;

means in said cavity for displacing a portion of said cavity and formed of a mass of plastic foam larger in size than the opening in said plate and having properties which enable said foam to be implaced through the opening of said plate; and,

means in said opening in said plate for sealing said foam within said cavity.

4,523,760

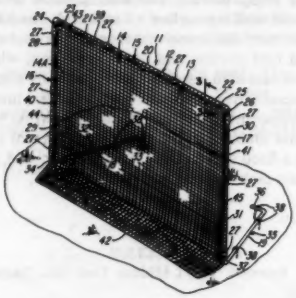
PORTABLE GOLF DRIVING NET ASSEMBLY

Robert Bednarczuk, 2283 Bone Rd., R.R.#4, Lebanon, Ohio 45036

Filed Oct. 5, 1983, Ser. No. 539,090
Int. Cl.³ A63B *69/36*
U.S. Cl. 273—181 F **7 Claims**

1. A recreational net assembly comprising a frame having a plurality of members, a net, and means for mounting said net on said frame, said net having an arrangement of first and second sets of generally parallel spaced-apart cords, said sets arranged generally perpendicular to each other and having ends which constitute edges of said net, the spaced-apart cords in at least one edge overlapping at least one of said frame members and

contacting at least some of the spaced-apart cords constituting an adjacent part of said net, said mounting means comprising a



lacing member passed alternately between spaced-apart cords in said one edge and said adjacent part of said net.

4,523,761

METHOD AND APPARATUS FOR RATING HITS ON TARGETS

Georg Huscher, Ottobeurer Str. 31, D-Markt Rettenbach, Fed. Rep. of Germany

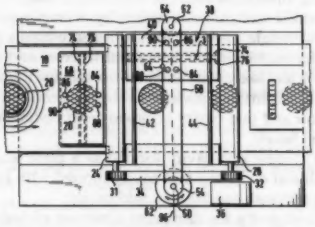
PCT No. PCT/DE82/00168, § 371 Date Apr. 28, 1983, § 102(e) Date Apr. 28, 1983, PCT Pub. No. WO83/00920, PCT Pub. Date Mar. 17, 1983

PCT Filed Aug. 24, 1982, Ser. No. 496,319

Claims priority, application Fed. Rep. of Germany, Sep. 1, 1981, 3134561

Int. Cl.³ F41J *5/02*

U.S. Cl. 273—371 **15 Claims**



7. Apparatus for rating hits on targets comprising in combination:

(a) a target feeder accommodated in a housing having means for conveying a target in a predetermined direction and a travel pulse generator associated with said feeder;

(b) a first photoelectric detector system adjacent the path of travel of said target including means for detecting two mutually opposite hole edges of a target moving in a predetermined direction, means for detecting the bright-dark boundaries at the mutually opposite edges of a bull's eye of said target, means for receiving a transmitted light or reflected light from said detecting means and generating hole center and bull's eye center signals;

(c) a second photoelectric detector system spaced from said first photoelectric detector system having means for transporting said second system transversely to the direction of movement of said target, means for detecting two mutually opposite hole edges of said target, means for detecting the bright-dark boundaries at the mutually opposite edge of a bull's eye of said target, means for receiving a transmitted light or reflected light from said detecting means into hole center and bull's eye center signals; and

(d) means for converting bull's eye center signals, hole center signals into a rating for said target hits.

4,523,762

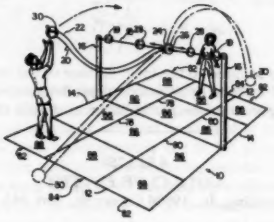
GAME APPARATUS

Ronald S. Garner, Sr., P.O. Box 545, Dayton, Ohio 45402

Filed Oct. 12, 1984, Ser. No. 660,343

Int. Cl.³ A63B *71/02*

U.S. Cl. 273—411 **12 Claims**



1. Game apparatus, comprising:

a generally rectangular playing field defined within a pair of spaced, parallel baselines and a pair of spaced, parallel sidelines,

a pair of support posts positioned outside said playing field, said posts each being positioned adjacent the midpoint of a respective one of said sidelines,

a support line extending between said pair of support posts and attached to said posts adjacent their upper ends, said support line bisecting said playing field and extending generally parallel to said baselines,

a tether line means,

a tether line ring engaging said support line and attached to a first end of said tether line means, and

a playing ball attached to the second end of said tether line means, whereby said playing ball may be struck by one or more players on either side of said support line and caused to travel repeatedly over said support line.

4,523,763

TURBOCHARGER LUBRICATING OIL SEALING METHOD

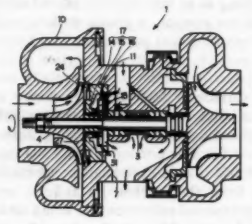
Masumi Asano, Toyota; Mitsuyuki Ugajin, Okazaki, and Kiyoshi Isogai, Toyota, all of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Japan

Filed Jul. 3, 1984, Ser. No. 627,660

Claims priority, application Japan, Jul. 8, 1983, 58-106636[U]

Int. Cl.³ F16J *15/40*

U.S. Cl. 277—1 **16 Claims**



1. A method of assemblying a lubricating oil sealing apparatus in a turbocharger, comprising:

placing an annular resilient sealing means around an outer peripheral portion of an annular main portion of a sealing

collar, whereby an outer diameter of the annular resilient sealing means is greater than an outer diameter of the outer peripheral portion of the annular main portion of the sealing collar;

inserting the annular main portion of the sealing collar into a hole in a retainer, such that the outer diameter of the annular resilient sealing means resiliently engages an inner diameter of the hole in the retainer;

press fitting a deflector into a stepped portion of the retainer, said stepped portion of the retainer being located at an outer peripheral portion thereof and engaging an outer circumferential portion of the deflector, whereby a radially extended projection of the annular sealing collar is located between the retainer and the deflector, such an assembly comprising the oil sealing apparatus;

press fitting the oil sealing apparatus into a recess in a housing; and

securing the oil sealing apparatus to the housing with an annular stop ring.

4,523,764

FLUID-SEALED SHAFT SEAL WITH BORES FOR SUPPLYING AND DISCHARGING FLUID

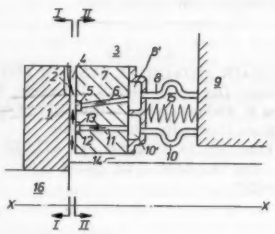
Rolf Albers, Oberhausen; Emil Aschenbruck, Duisburg; Günter Neuhaus, and Joachim Kotzur, both of Oberhausen, all of Fed. Rep. of Germany, assignors to M.A.N. Maschinenfabrik Augsburg-Nürnberg Aktiengesellschaft, Fed. Rep. of Germany

Filed Jun. 21, 1983, Ser. No. 506,345

Claims priority, application Fed. Rep. of Germany, Jun. 25, 1982, 3223703

Int. Cl.³ F16J *15/38, 15/40, 15/48*

U.S. Cl. 277—3 **14 Claims**



1. A fluid sealed device for a shaft rotatable in a housing, comprising:

a first seal ring rotatating with the shaft having a radial surface;

a second seal ring having a radial surface defining a radial gap with said first seal ring radial surface;

a packing element connected between the housing and said second seal ring for biasing said second seal ring toward said first seal ring to close said gap;

said second seal ring having at least one sealing fluid supply bore having a supply opening communicating with said gap and a fluid discharge bore having a discharge opening communicating with said gap at a different radial position from said supply opening;

sealing fluid supply means connected to said at least one sealing fluid supply bore for supplying sealing fluid to said gap for acting against the biasing of said packing element; and

auxiliary fluid supply means communicating with said gap at a radial position other than that of said supply and discharge openings, for supplying auxiliary fluid to said gap to form a substantially annular zone of elevated pressure with respect to a pressure of said sealing fluid at said discharge opening for reducing escape of sealing fluid radially from said gap.

4,523,765

HIGH PRESSURE SEALING MEANS FOR LONGITUDINALLY MOVABLE PARTS OF DEEP-WELL DRILLING TOOLS

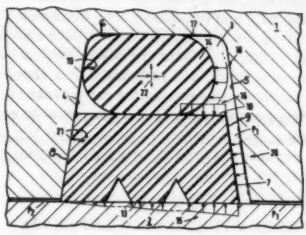
Gerhard Heidemann, Celle, Fed. Rep. of Germany, assignor to Norton Christensen, Inc., Salt Lake City, Utah

Filed Apr. 26, 1984, Ser. No. 604,242

Claims priority, application Fed. Rep. of Germany, Jun. 7, 1983, 3320515

Int. Cl.³ F16J *9/05, 5/24*

U.S. Cl. 277—165 **7 Claims**



1. A high-pressure sealing means for two relatively longitudinally movable parts of deep-well drilling tools, comprising: a wearing sealing ring of resilient, wear and heat resistant organic polymeric material disposed in an annular groove of substantially trapezoidal cross-sectional shape with two inclined sides that converge towards the bottom of the annular groove in a first part of a drilling tool and bearing against a second part of the drilling tool and the sealing ring having inclined sides extending parallel to and adjacent the inclined sides of the annular groove and a sealing wall surface extending substantially over its axial length, which seals against the second part, is narrower than the width of the annular groove and displaceable between the two inclined sides of the annular groove for the selective formation of a static sealing surface at one of the inclined sides of the annular groove; and a pressure ring which prestresses the wearing sealing ring radially, being formed from a tightening and sealing ring of resilient elastomer material which has a large volume in relation to space remaining in the annular groove in which it is located and which can be and is compressed and deformed radially between an opposite wall surface of the sealing ring situated opposite the sealing wall surface and the bottom of the annular groove.

4,523,766

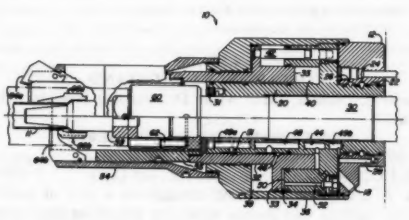
CHUCK ASSEMBLY

Larry A. Dettmer, Waterloo, Iowa, assignor to Deere & Company, Moline, Ill.

Filed Jun. 13, 1983, Ser. No. 504,030

Int. Cl.³ B23B *31/18*

U.S. Cl. 279—4 **9 Claims**



1. A chuck mechanism for positioning a tube assembly com-

prised of a tube and tube fitting mounted on an end of the tube, the chuck mechanism comprising:

an axially-fixed pilot having a tube-locating surface for engagement with the tube assembly;

a hollow cylindrical axially-fixed closure sleeve coaxially surrounding at least a portion of the pilot;

a hollow cylindrical carrier tube slidably mounted for axial movement within the closure sleeve;

a plurality of circumferentially-spaced jaws pivotally attached to the carrier tube and operatively engageable with the closure sleeve; and

pressure-operated, axially-movable piston means coupled to the carrier tube and responsive to an unclamping pressure signal for axially moving the carrier tube and jaws to a releasing position wherein the jaws pivot to disengage from the tube fitting and responsive to a clamping pressure signal for axially moving the carrier tube and jaws to a clamping position wherein the jaws pivot to engage the tube fitting and wherein the jaws move the tube into butting engagement with the axially-fixed pilot.

4,523,767

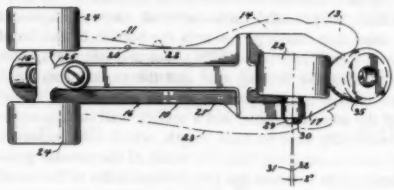
THREE WHEELED ROLLER SKATE

Steven W. Le Page, Rte. 5, Box 5125, Pasco, Wash.

Filed Nov. 12, 1982, Ser. No. 440,972

Int. Cl.³ A63C *17/04*

U.S. Cl. 280—11.19 **17 Claims**



1. A three wheeled roller skate, comprising;

an elongated rigid frame having a front and rear end and adapted to receive the foot of a skater with the toes of the foot situated above the front frame end and the heel above the rear frame end;

a rear pair of rollers mounted to the frame at the rear end thereof, for free rotation about an axis transverse to the frame;

a single front roller at the front frame end for free rotation thereon about an axis situating the front roller in an outward angled toe out orientation and at an inside cambered orientation in relation to the rear roller axis and the foot of a skater resting on the frame such that the weight of the skater borne by the front roller is shifted laterally inward toward the midline of the skater's body to accommodate natural weight distribution of the skater and to increase stability by concentrating the skater's weight within the space occupied by the skater's body.

4,523,768

COLLAPSIBLE CART-STAND

Joseph C. Diubala, 38115 Alcoy Dr., Sterling Heights, Mich. 48077

Filed Nov. 14, 1983, Ser. No. 551,679

Int. Cl.³ B62B *3/02*

U.S. Cl. 280—42 **5 Claims**

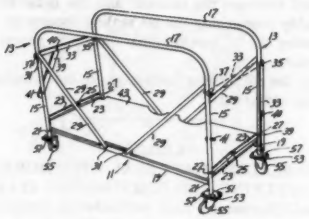
2. A collapsible cart-stand comprising a pair of parallel spaced upright side frames mounting casters at their lower ends;

longitudinally spaced pairs of aligned foldable frame support links at their inner ends pivotally connected and at their outer ends pivotally connected to lower end portions of said side frames and extending transversely thereof;

each side frame including a longitudinally extending bottom support rod interconnecting its lower ends;

a platform spanning said side frames and at its side overlying said support rods and removably secured thereto;

a pair of longitudinally spaced frame anchor links at their one ends pivotally connected to upper end portions of one side frame and at their other ends adjustably connected to upper end portions of the other side frame and extending transversely thereof;



said side frames upon removal of said platform and adjusting said other ends of said anchor links adapted for collapsing into parallel engaging registry, with said support links folded;

and a reinforcement link at one end pivotally connected to each anchor link respectively intermediate its ends, and at its other end removably secured to an intermediate connection on an adjacent side frame between its connections with said support and anchor links.

4,523,769

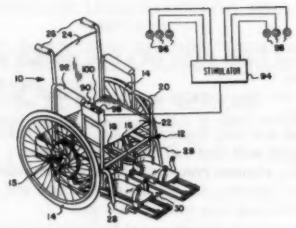
WHEELCHAIR AND DRIVE SYSTEM THEREFOR

Roger M. Glaser, Dayton; Jerrold S. Petrofsky, Beavercreek, and Howard R. DuFour, New Carlisle, all of Ohio, assignors to Wright State University, Dayton, Ohio

Filed Sep. 14, 1982, Ser. No. 417,933

Int. Cl.³ A61G *5/02*; B62M *1/04*

U.S. Cl. 280—252 **13 Claims**



1. A wheelchair comprising:

a chair portion including a pair of upright frame members, a generally planar and horizontal seat and a generally planar and vertical back connected between said frame members for supporting the body of a disabled person, and an arm rest carried on each of said frame members;

a chassis for supporting said chair portion;

a pair of side wheels for supporting said chassis;

at least one front wheel smaller than said side wheels for cooperating therewith in supporting said chassis;

a pair of individually movable footrests connected to said chassis for supporting the feet of said persons; and

drive means connected to said footrests for propelling said

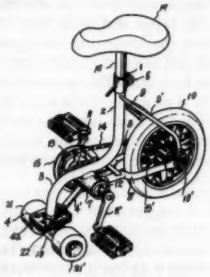
wheelchair in response to movement of at least one of said footrests.

4,523,770

ROLLER BICYCLE

Bang W. Lee, 302-86, Echon-Dong, Yongsan-Ku, Seoul, Rep. of Korea

Filed Mar. 14, 1983, Ser. No. 475,115
Claims priority, application Rep. of Korea, May 31, 1982, 2472/1982
Int. Cl.³ B62K *5/04*
U.S. Cl. 280—266 **2 Claims**



1. A roller bicycle having a primary frame member, said primary frame member having a vertical upper portion, a vertical lower portion and a rearwardly and upwardly inclined central portion connected to said upper and lower portions by curvilinear transition sections all formed as a single unitary element; a pedal shaft tube rigidly mounted to and beneath said central portion and pedal means rotatably mounted on said tube, a bifurcated rear frame member extending generally horizontally from said pedal shaft tube; a single rear wheel within the rear bifurcated portion of said rear frame member and an axle rotatably securing said rear wheel to the rear ends of said rear frame member; means on the ends of said rear frame members for adjusting the position of said axle and wheel lengthwise of said frame member; means interconnecting said rear wheel and pedal means; a seat and means securing said seat for vertical adjustment to and above the top end of said upper primary frame portion; a base plate ridigly secured to the bottom end of said lower portion of said primary frame; a roller plate and a shock absorbing plate mounted between said base and roller plate and means interconnecting said base, shock absorbing and roller plates in laminar fashion; a pair of laterally spaced rollers at the front end of said bicycle, said rollers being of substantially smaller diameter than said rear wheel and a shaft and shaft housing means mounting said rollers for free rotation, resilient support elements connecting said shaft housing to said roller plate whereby limited lateral tilting of said primary frame with respect to the shaft housing and shaft can occur; said seat being substantially midway between said rear wheel and said front rollers and between said rear wheel and said pedal shaft tube.

4,523,771

DRAWBAR APPARATUS

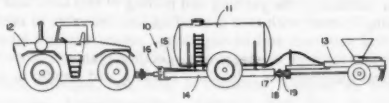
Harold C. Bender, Rte. 1, Poseyville, Ind. 47633

Filed Dec. 27, 1982, Ser. No. 453,608
Int. Cl.³ B60D *1/14*
U.S. Cl. 280—474 **7 Claims**

1. In a first pulled vehicle normally coupled between a tow vehicle and a second pulled vehicle, a draw bar apparatus, comprising:

a housing attached to said first pulled vehicle; and

a draw bar having two ends and extending substantially between the front and rear ends of said first pulled vehicle, said one end of said draw bar attached for vertical pivotal movement to a pivot adjacent the front end of said housing, the other end of said draw bar including coupling means for coupling to said second pulled vehicle, said



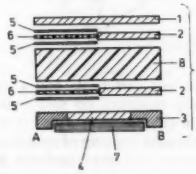
draw bar pivoting relative to said first pulled vehicle in response to relative tilting in a vertical plane between said second pulled vehicle and said first pulled vehicle.

4,523,772

SANDWICH TYPE CONSTRUCTION MULTILAYER SKIS

Anton Arnsteiner, Mittersill, Austria, assignor to Blizzard Gesellschaft m.b.H., Mittersill, Austria

Filed May 18, 1983, Ser. No. 495,797
Claims priority, application Austria, May 26, 1982, 2080-82
Int. Cl.³ A63C *5/00*
U.S. Cl. 280—610 **9 Claims**



1. A multilayer ski having a sandwich type construction and a central longitudinal axis, comprising a core, a cover layer located on one side of said core and a running base layer located on the other side of said core, and at least one web located between said core and one of said cover layer and running base layer, said multilayer ski having a pair of opposite side surfaces extending in the long direction of the ski and between said cover layer and said base layer, said core, said cover layer, said running base layer and said at least one web extending in the long direction of the ski for at least a significant length of the ski and between said opposite side surfaces, wherein the improvement comprises that at least one of said web and said core is divided in the width dimension between said opposite side surfaces into at least a first part and a second part each extending in the length dimension of the ski and each of said first part and second part have a different shear moduli each of said longitudinally extending first and second parts of said ski is located on an opposite side of an imaginary divisional plane extending perpendicularly to said running base from the other one of said first and second parts, the divisional plane extends in the long direction of the ski and is positioned at least adjacent the central longitudinal axis of the multilayer ski so that each of said first and second parts has a different torsional strengths.

4,523,773

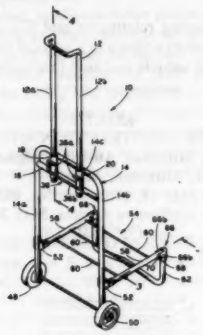
LUGGAGE CART

Gilbert J. Holtz, 182 Tibbetts Rd., Yonkers, N.Y. 10705

Filed Dec. 27, 1982, Ser. No. 453,878
Int. Cl.³ B62B *1/04*
U.S. Cl. 280—654 **2 Claims**

1. An improved luggage cart of the type foldable from a compact storage condition into an open condition for transporting luggage at an airport or the like, said cart comprising

a body having a back, a transversely oriented support member connected across said back, a spaced-apart pair of cylindrical members connected in vertical relation to said support member, a handle slidably disposed on said back for sliding movement in said cylindrical members between a compact storage position adjacent thereto and a position extending therefrom for facilitating the pushing and pulling of said cart, said handle being formed with two depending legs movable in said cylindrical members and having detent means thereon adapted to project through openings of a specified diameter in said cylindrical members for releasably holding said handle in said ex-



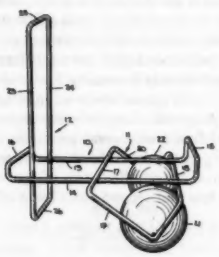
tending position on said cart back, and a cylindrical detent-release bar pivotally mounted on said cylindrical members having a diameter in cross section which is sized in relation to said diameter of each said opening of said detent means so that the pivotal traverse of said detent-release bar results in the projection thereof into said openings and establishes contact with said detent means such that the continuation of said pivotal traverse of said bar causes the complete withdrawal of said detent means from said openings and the release of said handle incident to allowing the sliding movement thereof from said extended position into said compact storage condition adjacent said cart back.

4,523,774

COLLAPSIBLE TOW CART

James Dickerson, Pomona, N.Y., assignor to Kevin E. Brown, Tallman, N.Y.

Filed Oct. 13, 1983, Ser. No. 541,435
Int. Cl.³ B62B *1/20*
U.S. Cl. 280—655 **7 Claims**



1. A collapsible tow cart for beach use and similar applications comprising:

A a generally rectangular main frame having parallel beams and upturned front and rear ends to provide a loading bed;

B a generally rectangular cross frame attached across the front of the main frame in a T-formation, said cross frame having parallel beams which are connected to the beams of the main frame at their points of intersection and having down-turned V-shaped ends whose apexes lie below the main frame and are joined by a transverse axle, the rear beam of the cross frame being attached to the upper face of the main frame beams to form a ledge, the front beam being attached to the under face of the main frame beams, the space between the ledge and the upturned front end of the main frame being sufficient to accommodate a cold chest;

C two identical wheels mounted on said axle in the open region between the ends of the cross frame and the beams of the main frame; and

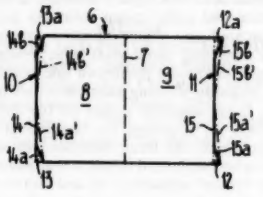
D a rectangular loop having parallel beams pivotally connected to the beams of the main frame within the rear thereof at a position spaced from the upturned rear end at a point adjacent the lower end of the loop whereby when the loop is erected, the lower end functions as a ground rest and the upper end as a cart handle, such that when the cart is drawn, the loop abuts the upturned rear end of the main frame and is at an angle to the main frame, the loop being foldable over the main frame to collapse the cart, the space between the ledge and the erected loop being sufficient to accommodate folded beach chairs.

4,523,775

FOLDED PRINTED SHEET OR PRINTED SHEET INTENDED TO BE FOLDED AND METHOD AND APPARATUS FOR FABRICATION THEREOF

Walter Reist, Hinwil, Switzerland, assignor to Ferag AG, Hinwil, Switzerland

Filed Jun. 21, 1982, Ser. No. 390,505
Claims priority, application Switzerland, Jun. 29, 1981, 4267/81
Int. Cl.³ B42F *21/00*
U.S. Cl. 283—36 **8 Claims**



1. A folded printed sheet or a printed sheet intended to be folded and operated upon by automatic stacking or tucking equipment, comprising:

a sheet of essentially uniform thickness having opposed side edges and a fold line intermediate said opposed side edges;

said opposed side edges forming a first side edge and a second side edge;

at least one protruding portion provided at the first side edge;

said at least one protruding portion adapted to be cut-away after completion of a sheet handling operation;

said at least one protruding portion extending only over a portion of the length of the first side edge;

an inset portion provided at the second side edge located opposite the first side edge with respect to said fold line;

said inset portion having a shape essentially corresponding to that of said at least one protruding portion;

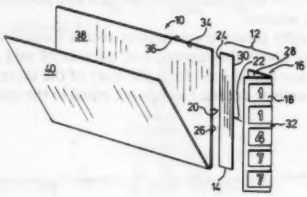
wherein the first side edge and the second side edge, in an unfolded condition of the sheet, extend essentially parallel to one another along a related bent line which is bent at least once; and

the first side edge and the second side edge possess a region extending essentially parallel to the fold line and at least one region forming an angle with respect to the region extending parallel to the fold line.

4,523,776
METHOD OF ADDING COLOR CODED LABELS TO FILES

Donald T. Barber, Toronto, Canada, assignor to Datafile Limited, Willowdale, Canada

Filed Jun. 24, 1981, Ser. No. 276,939
Int. Cl.³ B42F *21/06*
U.S. Cl. 283—39 **3 Claims**

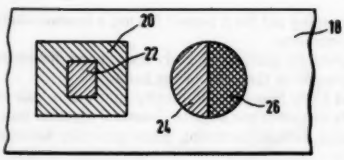


1. In combination, an add-on tab and a file substrate having a straight edge to which said add-on tab is secured, said add-on tab comprising an elongate extension member in abutment with the straight edge of said file substrate and adhesively secured thereto by a carrier web having a thickness in the range of about 3 to 5 mils and of a length approximately equal to the length of said extension member, a plurality of discrete preprinted labels on the upper surface of the said web with each label spaced in the length of the carrier web and collectively defining a colour code for identifying a code substantially peculiar to such substrate, a transparent high tensile strength reinforcing plastic film of a thickness in the range of about 0.5 to about 2 mils adhesively secured over said labels and said carrier web and extending the length of said carrier web, said carrier web and film being of a width greater than said extension member and being wrapped about said extension member and secured either side and about one edge of said extension member, said add-on tab being secured to said file substrate either side thereof by said carrier web and reinforcing film which bridge the junction of said extension member and said file substrate either side of said file substrate to provide a unitary add-on tab along an edge of said file substrate, said carrier web and said plastic film distributing localized loads applied to said tab along said tab and to said file substrate adjacent said straight edge.

4,523,777
IDENTIFICATION CARD AND A METHOD OF PRODUCING SAME

Hans J. Holbein, and Thomas Maurer, both of Munich, Fed. Rep. of Germany, assignors to GAO Gesellschaft fur Automation und Organisation mbH, Munich, Fed. Rep. of Germany

Filed Dec. 14, 1981, Ser. No. 330,890
Claims priority, application Fed. Rep. of Germany, Dec. 23, 1980, 3048733
Int. Cl.³ B42D *15/00*; G01D *15/10, 15/34*
U.S. Cl. 283—67 **3 Claims**

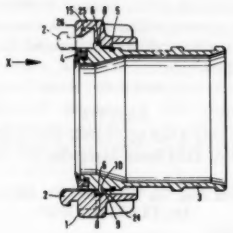


1. A method of producing an identification card having visually detectable information, comprising:
applying a plurality of color layers over each other on a synthetic carrier; and
forming the information by contacting the color layers with a controlled laser beam and selecting the energy of the laser beam and the color layer characteristics in such a way that a new color is formed restricted to a certain area, said new color being formed by an interaction between the color layers produced by at least partially melting the color layers with the laser beam.

4,523,778
HOSE COUPLING

Karl Ebert, Giengen, Fed. Rep. of Germany, assignor to Max Widenmann, Armaturenfabrik, Giengen, Fed. Rep. of Germany

Filed Mar. 9, 1982, Ser. No. 356,530
Claims priority, application Fed. Rep. of Germany, Mar. 17, 1981, 3110212
Int. Cl.³ F16L *55/00*
U.S. Cl. 285—73 **5 Claims**



1. A hose coupling comprising a pair of coupling halves, each said coupling half comprising a similar cam ring arranged for securing said coupling halves together, each said cam ring having an axis and a first end and a second end spaced apart in the axial direction of said cam ring, at least two cams formed on the first end of each said cam ring, each said cam ring having an axially extending radially inner cam ring surface forming the radially inner surface of said cams, a circumferentially extending groove formed in said inner cam surface and cutouts formed in said inner cam ring surface opening from said first end into said circumferentially extending groove so that said cams on each of said cam rings can be inserted through the cutouts into said circumferentially extending groove in the other of said cam rings and then rotated about said cam ring axis relative to the other said cam ring for interengaging said coupling halves and placing said hose coupling in the closed position, a separate unitary tubular connection member having a central axis secured to each said cam ring so that said cam ring is rotatably supported on said connecting member, and each said tubular connection member having a first end and a second end spaced apart in the axial direction thereof and an axially extending outer surface and axially extending inner surface, each said connection member having a sealing ring in the first end thereof so that said sealing rings contact and provide a seal when said coupling halves are interconnected, wherein the improvement comprises that said circumferentially extending groove comprises a first side and a second side disposed in spaced relation in the axial direction of said cam ring and extending radially outwardly from said radially inner cam ring surface, and a bottom spaced radially outwardly from said radially inner cam ring surface and extending axially between said first and second sides, said first side of said circumferentially extending groove being located closer to the first end of said cam ring than said second side, said first end of said cam ring includes a circumferentially extending strip extending between each cam from said cutouts around the axis of said cam ring and having a pair of radially extending side surfaces extending transversely of the axis of said cam ring with one of said side surfaces forming said first side of said circumferentially extending groove, a recess (8)

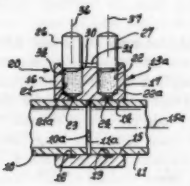
formed in said second side of said circumferentially extending groove and also in said radially inner cam ring surface of said cam ring so that said recess extends in the axial direction of said cam ring toward the second end thereof from said second side of said circumferentially extending groove and radially outwardly from said radially inner cam ring surface, said recess having a radially extending side spaced axially from the second side of said circumferentially extending groove and forming a shoulder (9), said connection member adjacent the first end thereof has circumferentially extending extensions (6) projecting radially outwardly from the outer surface thereof corresponding to the radial depth of said recess (8) radially outwardly from said radially inner cam ring surface, said extensions (6) form a stop extending angularly around said connecting member in the circumferential direction thereof for a maximum angular distance corresponding to the angular spacing between the adjacent surfaces of two said cams, said recess having a width corresponding to the axial thickness of said extensions so that each said connection member can be inserted axially into the corresponding said cam ring until said extensions (6) contact said shoulder (9) when said hose coupling is in the closed position.

4,523,779

PIPE COUPLING AND SEALING DEVICE THEREFOR

Granville S. Knox, 1323 Santa Margarita Dr., Fallbrook, Calif. 92028

Filed Aug. 23, 1984, Ser. No. 643,551
Int. Cl.³ F16L *13/10*
U.S. Cl. 285—294 **17 Claims**



1. In a coupling for joining two pipe sections having end terminals, the combination comprising

(a) a collar forming a through opening and having bore surfaces bounding said opening to closely receive a pipe section so that the collar is movable axially of the pipe section into coupling position spanning a joint formed by at least one of said end terminals,

(b) the collar having associated well means communicating with an annular recess sunk in at least one of said surfaces and extending outwardly thereof for reception of flowable cement,

(c) and plunger means to pressurize said cement supplied to said well means to cause flow of the cement to said recess,

(d) the plunger means cemented to said body in said well means after the cement has been pressurized to flow and at least substantially fill said recess.

4,523,780

TUBE JOINT

David A. Cheer, Reading, England, assignor to J.P. Products, Inc., Blue Bell, Pa.

Filed Oct. 22, 1982, Ser. No. 435,916
Claims priority, application United Kingdom, Apr. 2, 1982, 8209871
Int. Cl.³ F16L *55/00*
U.S. Cl. 285—399 **3 Claims**

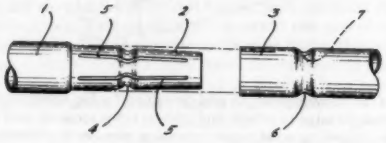
1. A joint for linking first and second hollow ridge tube sections in axial alignment to form a continuous tube of substantially uniform diameter, comprising:

(a) a first tube section having one end portion of substantially uniform diameter;

(b) an inwardly directed continuous ridge formed circumferentially of said one end portion and spaced a predetermined distance from said one end of said first tube section;

(c) a second tube section having one end portion commencing with an abrupt decrease in outside diameter and tapering uniformly from the abrupt diameter decrease to the end of said second tube section, the tapered end being adapted to be received within said one end portion of said first tube section;

(d) an inwardly directed continuous recess formed circumferentially about the tapered end portion of said second tube section and spaced from the start of the taper at said abrupt diameter decrease a distance equal to the spacing of



said inwardly directed ridge from said one end of said first tube section, said circumferential recess adapted to receive the inwardly directed ridge of said first tube section end portion and interlock said tubes together; and

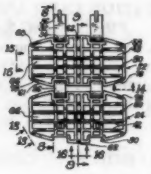
(e) a plurality of uniformly spaced longitudinal slots formed in the tapered end portion of said second tube section extending on either side of and through the recess therein, said longitudinal slots terminating short of the end of said second tube section and short of the end of said tapered section adjacent said abrupt diameter decrease, forming in said tapered section resilient spring leaf sections which deform as the tube's sections are joined to permit the inward ridge portion of said one tube section to engage securely within the inward recess portion of said second tube section.

4,523,781

GRIPPING AID FOR THE MANUALLY DISABLED

Hal Brody, 5366 Jackson Dr., La Mesa, Calif. 92041

Filed Feb. 23, 1984, Ser. No. 582,886
Int. Cl.³ A47F *13/06*; A47J *45/00*
U.S. Cl. 294—1.1 **16 Claims**



1. A grasping aid for a person having a manual/digital disability comprising:

(a) a generally palm-sized, body shaped and dimensioned to be grasped in the palm of the hand;

(b) said body being longitudinally split into a pair of half-shells hinged at one edge to clamshell together into mated relation defining a mating plane generally bisecting said body;

(c) at least one elongated channel lying generally along said plane and opening through the perimeter of said body;

(d) said body being resilient at least in those portions defining said channel, whereby implements having handles at least slightly oversized in cross-section can be gripped in said channel, whereby a person with a manual/digital

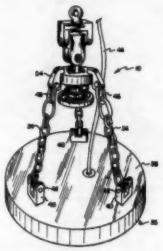
disability who would have trouble grasping said instrument directly can nevertheless engage said instrument in said channel by clam shelling said half-shells together, and grasping said body.

4,523,782

LOAD-ABSORBING MOUNT FOR ELECTROMAGNETS

Glenn E. Marshall, 346 County Rd. 681, Sullivan, Ohio 44880

Filed Mar. 7, 1983, Ser. No. 472,289
Int. Cl.³ B66C *1/04*
U.S. Cl. 294—65.5 **12 Claims**



1. A load-absorbing mount for connecting a crane or other lifting device to an electromagnet having a work-engaging face and a non-work-engaging face oppositely disposed, comprising:

a plurality of force-transmitting members, each force-transmitting member being connected at one end to the non-work-engaging face of the electromagnet;

a connecting member to which each force-transmitting member is connected at its other end;

a load-carrying member to which the lifting device is connected;

adjustment means disposed intermediate the connecting member and the load-carrying member, the adjustment means movable relative to the connecting member and the load-carrying member in order to control the spacing between the connecting member and the load-carrying member; and

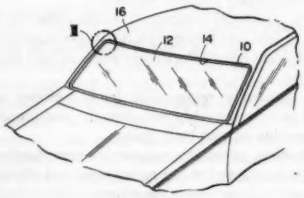
a spring disposed intermediate the connecting member and the load-carrying member, the spring serving to absorb loads imparted to the lifting device by the electromagnet under all operating conditions.

4,523,783

WINDOW MOULD

Yoshiyasu Yamada, No. 4-46-27, Kamisuna-cho, Tachikawa, Japan

Filed Oct. 6, 1983, Ser. No. 539,551
Claims priority, application Japan, Nov. 27, 1982, 57-208281; May 31, 1983, 58-97463
Int. Cl.³ B60J *1/02*
U.S. Cl. 296—93 **7 Claims**



1. In a window pane mounting arrangement including a panel of the vehicle body which defines therein a peripherally flanged window opening, a window pane having a peripheral edge disposed adjacent the flange of said panel thereby defining therebetween a clearance, said pane having outboard and inboard surfaces, an adhesive material partially disposed in said clearance to bond the flange and the inboard surface of said window pane, and a window moulding of elastic material adapted to be fitted to said clearance so that upon completion of the fitting thereof to said clearance, it becomes an ornament of said window pane mounting arrangement, THE IMPROVEMENT IN THAT said window moulding comprises:

an elongate band portion adapted to cover the entire length of the clearance throughout the entire length of the same, said band portion having outboard and inboard surfaces; and

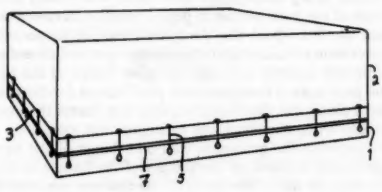
first and second leg portions depending and diverging from the inboard surface of said elongate band portion and disposed in said clearance with the respective free ends of said leg portions embedded in said adhesive material, said first and second leg portions being resiliently deformable toward each other, said first leg portion having a first engaging portion which is lockably engaged with the inboard edge of said window pane, said second leg portion having separated second and third engaging portions which are resiliently engaged with said flange, all of said engaging portions being located on the outer sides of their associated leg portions.

4,523,784

LATCH CONSTRUCTION FOR LOCKING A COVER TO A PLATFORM OF A LORRY

Kjell Aspea, Halmstad, Sweden, assignor to AJ-Produkter I Hyltebruk AB, Hyltebruk, Sweden

Filed Dec. 15, 1982, Ser. No. 449,854
Claims priority, application Sweden, Dec. 15, 1981, 8107481
Int. Cl.³ B60J *7/10*
U.S. Cl. 296—100 **12 Claims**



1. A latch construction for locking a cover to a platform comprising:

a plurality of latch units arranged along the periphery of said platform, each said latch unit including a latch element;

a plurality of elongated latch members arranged along the periphery of said cover, one end of each latch member being connected to said cover and the other end of each latch member being adapted to engage a corresponding latch unit;

means for moving each said latch element to an opened position to receive a corresponding latch member and for moving said latch element to a closed position to positively but releasably lock the latch member to said latch unit; and

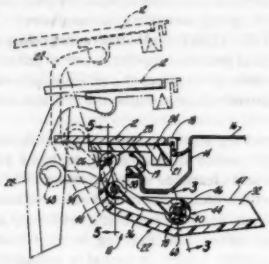
operator means connected to each of said latch elements for simultaneous operation of all said latch elements.

4,523,785

LATCH MECHANISM FOR HINGED PANELS

David L. Draper, Hamburg, and Gerald D. McKee, Highland, both of Mich., assignors to Cars & Concepts, Inc., Brighton, Mich.

Filed Dec. 23, 1981, Ser. No. 333,819
Int. Cl.[3] B60J 7/18
U.S. Cl. 296—224 3 Claims



1. A latch mechanism for selectively holding a hinged panel in open and closed positions relative to an opening in a vehicle body comprising: a frame extending around the opening, a handle including a pair of flanges that form a cavity, one of said flanges including an opening, means connecting said handle to said panel for pivoting about a first pivot axis, a link, means connecting said link to said frame for pivotal movement about a second pivot axis, lockable means connecting said handle and said link together for relative pivotal movement about a third pivot axis between a closed position in which said first and second axes are adjacent to each other and an open position in which said first and second axes are spaced from each other, said lockable means including a push button mounted on said link for axial movement along the third axis without any rotation with respect to the link, complementary stop elements including a tongue on said push button and also including a groove on said handle adjacent the opening in the one flange thereof, said tongue and groove being engageable with each other to hold said handle and said link against relative rotation in order to hold said panel in the open position, said tongue and groove being disengaged from each other upon axial movement of the push button to permit rotation between the handle and the link about the third axis in order to permit relative movement of said panel between the open and closed positions, a pin that extends between the other flange of the handle and the push button to support the push button for the axial movement along the third axis, a spring that biases the push button axially along the third axis to engage the tongue on the push button with the groove in said one flange of the handle, and said cavity formed by the flanges of the handle receiving and housing the link when the latch mechanism positions the panel in the closed position.

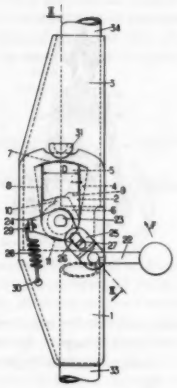
4,523,786

HINGE DEVICES FOR SEAT-BACKS

Alain Letournoux, St. Jean le Blanc, and Bernard Courtois, Champigny Morigny, both of France, assignors to Societe Industrielle Bertrand Faure, Etampes, France

Filed Jul. 7, 1983, Ser. No. 511,627
Claims priority, application France, Jul. 22, 1982, 82 12812
Int. Cl.[3] A47C 1/026
U.S. Cl. 297—367 6 Claims

1. A hinge device for a seat-back, comprising a control hand-lever (22) accessible to the person sitting in the seat, a first inwardly toothed sector (14) integral with a flange (1) of the sitting portion, a second inwardly toothed sector (17) integral with a flange (3) of the seat-back and coaxial with the first sector, locking means operable by means of the control hand-lever to make the two sectors at will either angularly locked with each other or angularly free with respect to each other, means comprising a group of toothed bolts adapted to coact with the teeth of the two sectors and a flat central rotary cam (6) operable by means of the control hand-lever and adapted to coact with each bolt so as to either move it radially away from the axis for engaging it with the two sectors (locking position), or on the contrary to allow it to be moved closer to said axis which frees it from these two sectors (unlocking position), and means (28) for resiliently urging the control hand-lever and so the cam to their positions corresponding to



locking, each bolt and the cam being mounted so as to be able to float slightly transversely with respect to the flanges while being axially wedged between these flanges, characterized in that each of the two toothed sectors (14,17) presents a total angular amplitude less than 90°, in that the group of bolts is formed by a single bolt (5) and in that the flat cam (6) has on its periphery, opposite its single boss (10) adapted to coact with the bolt, a semi-cylindrical land (11) adapted to coact directly with two complementary semi-cylindrical lands (12,15) comprised respectively by the two flanges, these lands being coaxial to the toothed sectors of these flanges.

4,523,787

FURNITURE CONSTRUCTION

Wilfred R. Robinson, 5197 Mitchener Rd., Sherkston, Ontario, Canada L0S 1R0

Filed Mar. 8, 1982, Ser. No. 356,132
Int. Cl.[3] A47C 4/02
U.S. Cl. 297—440 7 Claims

1. An article of furniture for seating comprising:

a rigid rectangular frame including a rectangular base frame, a rectangular seat frame, and a pair of upstanding arm frames, said base, seat and arm frames being interconnected with each other to form an enclosure with the seat frame spaced above and parallel to the base frame, and the arm frames being located at each end of the base and seat frames and rigidly secured thereto;

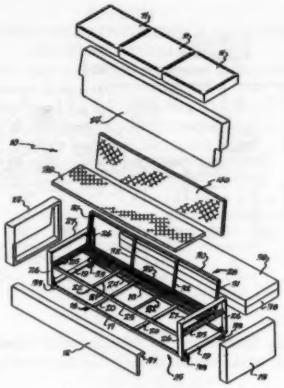
a normally upwardly extending rectangular back frame secured to said seat frame with the lower edge of the back frame adjacent one of the longer edges of said rectangular seat frame;

a hollow, generally rectangular back member which is adapted to be removably and slidably positioned over at least a portion of said back frame;

a pair of hollow, generally rectangular arm members, each of which is adapted to be removably and slidably positioned over at least a portion of one of said arm frames;

a removable seat in the form of a resilient cushion positioned on said seat frame and extending between said arm frames

and from said back frame substantially to the forwardmost edge of said seat frame; and



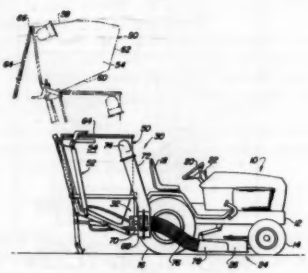
a removable front cover panel which is adapted to be removably positioned over the front side of said rigid rectangular frame between said base frame and said seat frame.

4,523,788

LIFT AND DUMP MECHANISM FOR A LAWN DEBRIS COLLECTION BOX

Keni K. Prasad, Beaver Dam, Wis., assignor to Deere & Company, Moline, Ill.

Filed Aug. 15, 1983, Ser. No. 523,248
Int. Cl.³ B60P *1/34*
U.S. Cl. 298—11 **5 Claims**



1. A lift and dump mechanism for a hopper, comprising:

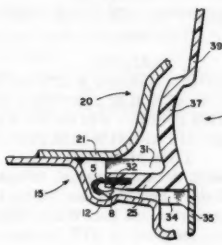
a support frame adapted for connection to a tractor and including members forming a cradle; a hopper having a lower end received in said cradle when the hopper is in a fill position, said hopper having first and second pairs of opposite upper corners and including a lid hinged for movement about a first horizontal axis located adjacent the first pair of said corners; said support frame including an upwardly and outwardly inclined guide structure located adjacent said hopper at a side opposite from said first horizontal axis and said guide structure including stop means adjacent an upper end thereof; a slide structure mounted for movement along said guide structure and extending in overlapping relationship to a substantial portion of the guide structure when the hopper is in its material receiving position; pivot means vertically pivotally connecting said hopper to an upper end of said slide structure for movement about a second axis extending parallel to the first axis and located adjacent the second pair of said corners; a pair of extensible and retractable hydraulic actuators located at opposite sides of the hopper adjacent said guide structure and having lower ends pivotally connected to said support frame; a pair of drive arms having first ends vertically pivotally connected to the slide structure at an upper location thereof and having second ends respectively pivotally connected to upper ends of the hydraulic actuator; a pair of latch arms respectively mounted to said pair of drive arms and being located for moving alongside areas at opposite sides of said lid; said lid having projections located in the path of movement of said latch arms and being engaged by the latter when the hydraulic actuators are in retracted conditions whereby the lid is held shut; and lost motion connection means connecting said drive arms to said hopper at a location between said first and second axis for permitting a preselected vertical movement of the drive and latch arms relative to the hopper and hence, the lid projections upon initial extension of the hydraulic lift actuators whereby extension of said actuators will first unlatch said lid, then raise the hopper together with the slide structure until the latter engages said stop means and then rotates said hopper about said second axis to dump the hopper contents.

4,523,789

WHEEL COVER AND RETENTION CLIP

James Schwarz, P.O. Box 9310, Daytona Beach, Fla. 32020

Filed Aug. 10, 1984, Ser. No. 639,595
Int. Cl.³ B60B *7/02, 7/06*
U.S. Cl. 301—37 P **12 Claims**



1. A wheel cover and retaining clip system for a vehicle wheel having an axially aligned flange attached to a tire rim, said rim having an annular safety hump comprising:

a circular wheel cover molded from plastic;

a plurality of retainer bosses integral with and circumferentially spaced around said wheel cover, each of said bosses including a body portion disposed essentially axially, a retaining clip recess in said body portion, and a buttress integral with said body portion and extending radially inward therefrom; and

a J-shaped spring clip, said clip having an inner arm portion, a short outer arm portion, and a bight forming a transition from said inner arm portion to said outer arm portion, said inner arm portion having a plurality of barbed tabs formed therein and said outer arm portion terminating in a pair of upwardly bent barbs;

whereby said upwardly bent barbs are adapted to engage the interior of said annular safety hump and said buttress is adapted to contact said wheel flange when said wheel cover is installed on said wheel.

4,523,790
LIGHT WEIGHT WHEEL FORMED FROM SHEET METAL

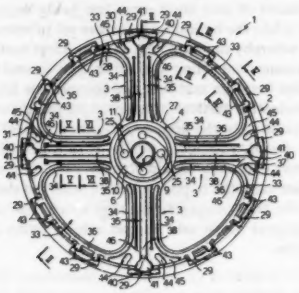
Lauro Mariani, Livorno, Italy, assignor to Gilardini S.p.A., Turin, Italy

Filed May 4, 1982, Ser. No. 374,740

Claims priority, application Italy, May 6, 1981, 67607 A/81; Mar. 25, 1982, 53104/82[U]

Int. Cl.³ B60B *3/04, 3/10*

U.S. Cl. 301—64 SD **10 Claims**



1. A wheel for a land vehicle comprising:

a central hub;

a substantially circular disc sheared and bent to integrally form a cup-shaped hub retainer element, a plurality of spokes radially extending from said hub retainer element, and an outer annular edge connecting said spokes, said outer edge sheared into a plurality of sectors bent alternatively above and below the plane of said outer edge whereby said outer edge forms an annular channel coaxial with said central hub; and

an annular rim element secured to said annular channel.

4,523,791
METHOD FOR MONITORING AND CONTROLLING HYDRAULIC BRAKE SLIP CONTROL DEVICES SUPPLIED WITH ENERGY FROM AN EXTERNAL SOURCE, AND AN APPARATUS FOR IMPLEMENTING THIS METHOD

Juan Belart, Walldorf; Jochen Burgdorf, Offenbach-Rumpenheim; Dieter Kircher, Frankfurt am Main; Hans-Wilhelm Bleckmann, Obermoerlen, and Lutz Weise, Mainz, all of Fed. Rep. of Germany, assignors to ITT Industries, Inc., New York, N.Y.

Filed Jul. 15, 1983, Ser. No. 514,062

Claims priority, application Fed. Rep. of Germany, Aug. 28, 1982, 3232051

Int. Cl.³ B60T *8/04*

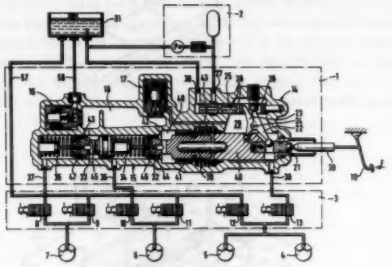
U.S. Cl. 303—92 **28 Claims**

1. A method for monitoring and controlling vehicular hydraulic brake slip control devices disposed in a hydraulic brake system having a plurality of brake circuits interconnected with the vehicle wheels and having at least one static brake circuit, at least one dynamic brake circuit and a hydraulic fluid reservoir, fluid being admitted into said static brake circuit from said dynamic brake circuit during a control cycle of said control devices, comprising the steps of:

detecting at least one of an insufficient amount of fluid in said reservoir and an inadequate pressure in one of an external energy supply for chambers of said brake system and said chamber of said brake system;

providing a signal indicative of the insufficient fluid and inadequate pressure;

partially deactivating said brake slip control devices in response to said signal by halting pressure reduction in said static brake circuit and inhibiting dynamic fluid flow into said static brake circuit from said dynamic brake circuit when at least one of said insufficient amount of fluid and said inadequate pressure is detected; and,



controlling deceleration of the connected wheels with said dynamic brake circuit during said deactivating step.

4,523,792
DUAL-CIRCUIT HYDRAULIC BRAKE SYSTEM

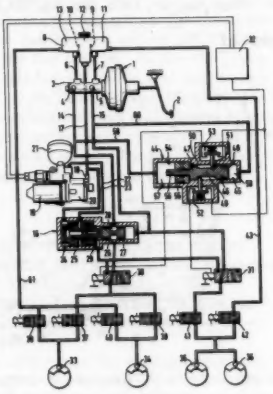
Juan Belart, Walldorf, and Jochen Burgdorf, Offenbach-Rumpenheim, both of Fed. Rep. of Germany, assignors to ITT Industries, Inc., New York, N.Y.

Filed Dec. 12, 1983, Ser. No. 560,383

Claims priority, application Fed. Rep. of Germany, Dec. 22, 1982, 3247496

Int. Cl.³ B60T *8/02, 17/22*

U.S. Cl. 303—92 **8 Claims**



1. A dual-circuit hydraulic brake system with slip control for automotive vehicles of the type having a plurality of sensors sensing the rotational behavior of the wheels and with a plurality of solenoid valves controllable by slip monitoring electronic devices, in which wheel brakes of the brake system connected to the brake circuits may be pressurized by a tandem master cylinder and by an auxiliary pressure source, with said auxiliary pressure source comprising an electric-motor-driven pressure medium pump and an accumulator, wherein each working chamber of the tandem master cylinder (3) communicates with a brake valve (16), wherein the brake valve (16) can generate a dynamic pressure which, upon the actuation of the brake, is supplied to the wheel brakes (33, 34, 35, 36) by a switching-over action of inlet valves (30, 31), and wherein the inlet valves (30, 31) are additionally controllable by a differential pressure alarm switch (44) having inputs respectively con-

nected to the working chambers of the tandem master cylinder (3).

4,523,793

HIGH-PERFORMANCE LOW-TORQUE ANTI-FRICTION BEARING ASSEMBLY

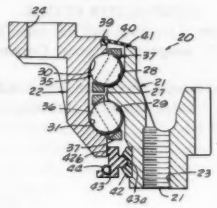
Conrad M. Fritz, Altadena, Calif., assignor to Keystone Engineering Company, Los Angeles, Calif.

Filed Sep. 30, 1982, Ser. No. 431,357

The portion of the term of this patent subsequent to Aug. 23, 1990, has been disclaimed.

Int. Cl.³ F16C *19/10*

U.S. Cl. 384—604 **14 Claims**



1. A heavy-duty anti-friction bearing assembly suitable for supporting a stabilized platform or the like with minimal torque losses under loads capable of causing distortion of said bearing assembly, including simultaneously occuring axial, radial and moment loads, comprising:

a single forged alloy steel nose ring having an annular radial nose formed with arcuate raceways on the opposite lateral sides thereof;

a single forged alloy steel cup ring concentric with said nose ring and formed with a pair of arcuate raceways converging toward a respective arcuate raceway on said nose ring and each of said arcuate raceways of said nose and cup rings having hardened surfaces;

separate rows of balls mounted between an associated pair of raceways of said nose and cup rings including independently functioning spacer means in each of said rows of balls for maintaining adjacent balls spaced apart; and wherein

the ratio of the diameter of said bearing assembly divided by the square root of the bearing assembly cross section having a value of at least 15.

4,523,794

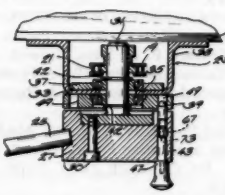
LOCK FOR MANUAL MOBILE STORAGE SYSTEM

Robert J. Peterman, Cederburg, Wis., assignor to Spacesaver Corporation, Fort Atkinson, Wis.

Filed Jul. 15, 1983, Ser. No. 514,114

Int. Cl.³ A47B *87/00*

U.S. Cl. 312—201 **2 Claims**



1. In combination with a mobile filing and storage system having frame means for storing material and adapted to move along a predetermined path; wheel means for supporting the frame means and for allowing easy movement thereof; drive means for driving the wheel means; and hub means mounted for rotation within the frame means about a hub axis for actuating the drive means,

an improved apparatus for locking the system against movement comprising:

a. an anti-roll plate fixedly attached to the frame means, the plate having at least one locking aperature therein;

b. a generally cylindrical pin having a longitudinal axis generally parallel to the hub axis disposed for manual reciprocation in the hub means, the pin being selectively positionable between partial insertion into the anti-roll plate locking aperature for locking engagement therewith and complete withdrawal from the antiroll plate locking aperature for unlocking disengagement therefrom, the pin having a plurality of circumferential grooves intermediate the ends thereof, the grooves being formed as a pair of symmetrical frusto-conical surfaces having common bases; and

c. biasing means disposed in the hub means for bearing against the pin frusto-conical surfaces to retain the pin in the selected position and to provide a gradually increasing and subsequent decreasing resistance to pin reciprocation, thereby creating a tactile feel of pin displacement between the engaged and disengaged positions.

4,523,795

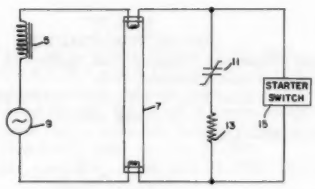
DISCHARGE LAMP OPERATING APPARATUS AND METHOD

Stephen G. Johnson, Georgetown, and William M. Labadini, Salisbury, both of Mass., assignors to GTE Products Corporation, Stamford, Conn.

Continuation of Ser. No. 431,956, Sep. 30, 1982, abandoned. This application Aug. 10, 1984, Ser. No. 639,608

Int. Cl.³ H05B *39/00*

U.S. Cl. 315—97 **14 Claims**



1. Discharge lamp operating apparatus comprising

a fluorescent lamp having a wattage of about 13 watts;

inductive ballast means coupled to said fluorescent lamp, said ballast means having an inductive value in the range of about 900 mh;

service voltage source means in the range of about 108 to 132 volts AC coupled to said inductive ballast means and to said lamp;

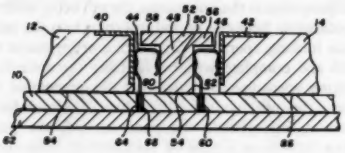
preheat switching means shunting said discharge lamp; and

a non-linear capacitor of a value in the range of about 3.0 nanofarads shunting said fluorescent lamp for effecting and continuing starting and operation of said fluorescent lamp at not less than about 75% of the RMS voltage of said service voltage source.

4,523,796
CONNECTOR ASSEMBLY FOR MOUNTING LEADLESS CHIP CARRIERS

William J. Rank, Minneapolis, Minn., assignor to Control Data Corporation, Minneapolis, Minn.

Filed Jan. 6, 1984, Ser. No. 568,755
Int. Cl.[3] H01R 23/72
U.S. Cl. 339—17 CF 11 Claims



1. A connector assembly for connecting a leadless chip carrier to external circuitry on a printed wiring board, said chip carrier having a plurality of electrically conductive chip carrier pads at its periphery, said connector assembly including:

an elongate and electrically insulative body mounted with respect to said printed wiring board;

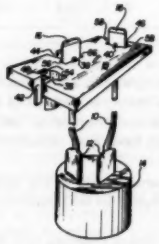
a first row of resilient, electrically conductive leads mounted with respect to said printed wiring board and along a first side wall of said body, each lead connected at a first end thereof to said external circuitry and extending away from a surface of said printed wiring board; each lead having first and second sectors generally equidistant from said printed wiring board surface and spaced apart from one another a predetermined distance transversely of said body; wherein said first and second sectors are substantially identical, each of said leads adapted to be mounted in alternative positions along said body with either of said first or second sectors engaging a chip carrier pad and the remaining sector engaging said first side wall.

wherein said chip carrier contacts and elastically deforms said leads as it is inserted on said printed wiring board, and, with said chip carrier fully inserted: one sector of each lead contacts an associated chip carrier pad; the other sector of each said lead contacts said first side wall; and said elastic deformation reduces the transverse distance between said sectors; said leads together tending to maintain the chip carrier in its fully inserted position.

4,523,797
CONNECTOR ADAPTOR

Samuel Kimmelman, Cranford, N.J., assignor to Parker Hannifin Corporation, Cleveland, Ohio

Filed Mar. 9, 1983, Ser. No. 473,413
Int. Cl.[3] H01R 3/00, 13/42
U.S. Cl. 339—147 R 7 Claims



1. An adaptor for locating a plurality of connectors in a selected array on one face of the adaptor, said adaptor comprising:

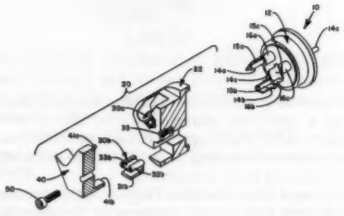
a plate having a face surface and a back surface that are separated by at least one edge surface, said plate further having a plurality of apertures, a plurality of channels, and a plurality of recessed shoulders with at least one of said channels located between the periphery of one of said apertures and an edge of the plate, and with at least one of said recessed shoulders adjacent to the periphery of one of said apertures; and

a plurality of support tubes connected to the back surface of said plate, each of said tubes being located adjacent to a respective one of said apertures and having a longitudinal slot for receiving one of said connectors therethrough.

4,523,798
CONNECTOR BLOCK

Kenneth C. Barrows, Liverpool, and Raymond T. Divers, Camillus, both of N.Y., assignors to Carrier Corporation, Syracuse, N.Y.

Filed Nov. 3, 1983, Ser. No. 548,379
Int. Cl.[3] H01R 13/436
U.S. Cl. 339—192 RL 2 Claims



2. A connector block including:

a base;

a plurality of U-shaped connector means in said base and each including a first arm defining a slot means for mechanically engaging a conductor means by relative motion along an axial direction and a second arm adapted to be connected to a source of electricity; and

cover means removably attached to said base and located with an outer edge radially inward of said second arms and overlying said first arms and coacting with said connector means for securing said connector means in said base and overlying said means for mechanically engaging a conductor means whereby the conductor means are prevented from being dislodged from said means for mechanically engaging a conductor means but allowing electrical access along said axial direction to said second arms.

4,523,799
DEVICE OPTIMIZING THE COUPLING OF TWO OPTICAL SYSTEMS FOR THE OBSERVATION AND ANALYSIS OF OBJECTS

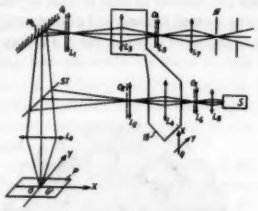
Michel M. Delhaye, Villeneuve d'Ascq; Paul A. Dhamelincourt, Anvoeullin; Edouard F. da Silva, Auneuil, and Jacques H. Barbillat, Villeneuve d'Ascq, all of France, assignors to Agence Nationale de Volorisation de la Recherche (ANVAR), Paris, France

Filed Dec. 6, 1982, Ser. No. 446,975
Claims priority, application France, Dec. 4, 1981, 81 23322
Int. Cl.[3] G02B 27/17, 21/00
U.S. Cl. 350—6.3 12 Claims

1. An optical coupling device for coupling two optical systems for the observation and examination of objects, one said system being an examination system and including a source of light and a radiance analyzer and the other said system being an observation system and including an objective lens, said coupling device being operative to redirect an examination

beam transmitted by the observation system along the principal optical axis of the examination system, characterized by

(a) a plurality of fixed lenses disposed at locations in said beam where images of points of an object are formed and



(b) at least one optical deflecting element disposed between the fixed lenses at a location in said beam where said images are enlarged,

(c) said optical deflecting element being movable rectilinearly to deflect the beam to carry out an analogous scanning of the object.

4,523,800

POLYGONAL MIRROR OPTICAL DEFLECTOR

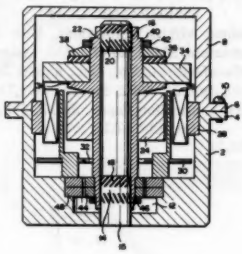
Mitsuo Yamashita, Yokohama; Goro Oda, Sagamihara, and Masashi Kamiya, Tokyo, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Jul. 14, 1983, Ser. No. 513,796

Claims priority, application Japan, Jul. 20, 1982, 57-126122; Jul. 30, 1982, 57-133557

Int. Cl.³ G02B *27/17*

U.S. Cl. 350—6.7 **7 Claims**



1. A polygonal mirror type optical deflector unit, comprising:

a housing;

a shaft extending within the housing;

a hollow cylindrical spindle detachably mounted on the shaft and having the shaft inserted thereinto;

a polygonal mirror secured to said spindle so as to rotate therewith;

dynamic pressure type bearing means for supporting the hollow cylindrical spindle in the radial direction;

thrust bearing means for magnetically suspending the hollow cylindrical spindle in its axial direction;

a motor rotor fixed to the hollow cylindrical spindle; and

a motor stator fixed to the housing for generating a field for rotating the motor rotor.

4,523,801

SCANNING OPTICAL SYSTEM SUBJECTED TO A MOISTURE PROOF TREATMENT

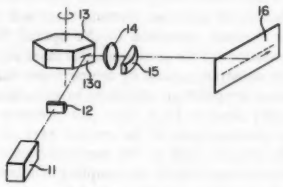
Takeshi Baba; Noriyuki Nose, both of Yokohama; Hideo Yoshikawa, Tokyo; Kazuo Minoura, Yokohama; Akinori Hasu, Sagamihara; Setsuo Minami, Kawasaki, and Kazuhiko Matsuoka, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 24, 1982, Ser. No. 351,936

Claims priority, application Japan, Mar. 3, 1981, 56-30352

Int. Cl.³ G02B *27/17*

U.S. Cl. 350—6.8 **5 Claims**



1. An optical system for scanning a medium with a beam spot, said optical system comprising:

means for supplying a light beam;

means for deflecting the light beam from said light beam supplying means in a predetermined direction and in a deflection plane;

means disposed between said deflecting means and said medium for imaging the light beam from said deflecting means on said medium as a beam spot, said imaging means having at least one lens element made of a moisture absorbing material the refractive index of which varies with the amount of moisture absorbed, said lens element having a shape in which the length in a direction parallel to the deflection plane of the light beam is greater than the length in a direction orthogonal to the deflection plane of the light beam; and

means for mitigating the influence on the imaged condition of the light beam on the medium resulting from said lens element being subjected to moisture, said mitigating means including a moisture proof member provided only on the portion of the surface of said lens element through which the light beam does not pass.

4,523,802

UNITARY MOUNTING STRUCTURE FOR SEMICONDUCTOR LASER AND OPTICAL FIBER

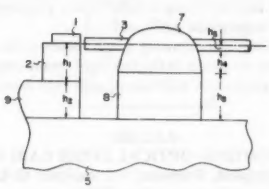
Haruo Sakaguchi, Tanashi; Norio Seki, Tokyo; Shu Yamamoto, Chofu, and Akira Okada, Tokyo, all of Japan, assignors to Kokusai Denshin Denwa Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 8, 1982, Ser. No. 347,061

Claims priority, application Japan, Feb. 19, 1981, 56-22201

Int. Cl.³ G02B *5/14*

U.S. Cl. 350—96.12 **7 Claims**



1. A unitary structure for a semiconductor laser and an optical fiber, comprising: a substrate; a semiconductor laser submount, a mount for the submount disposed on the substrate;

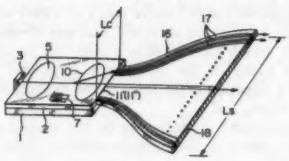
a semiconductor laser fixed by a fusion-welding material on the semiconductor laser submount; a fiber submount disposed on a substrate in the vicinity of the semiconductor laser mount and submount; and an optical fiber fixed to the fixed submount disposed to be coupled coaxially with output light of the semiconductor laser; the fiber submount including a fixing material stable over time having a melting point effective to not affect the fixedness stability between the substrate and the semiconductor laser submount and between the semiconductor laser submount and the semiconductor laser, the thicknesses of the semiconductor laser mount and submount and the fiber submount and fixing material being selected in terms of the interrelation between substantially common coefficients of linear thermal expansion of materials forming them and the coefficient of linear thermal expansion of the optical fiber so that expansion deviations of the semiconductor laser and the optical fiber from the substrate caused by temperature variations in a range including temperature variations in manufacturing steps are substantially equal to each other and effective to substantially reduce misalignment of the coaxial axes of the optical fiber and the output light of the semiconductor laser, and thereby minimize lowering of the coupling efficiency between the semiconductor laser and the optical fiber.

4,523,803

OPTICAL SCANNING DEVICE

Kozo Arao, Yokohama, and Tadashi Sato, Kokubunji, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 18, 1982, Ser. No. 350,063
Claims priority, application Japan, Feb. 27, 1981, 56-27763
Int. Cl.³ G02B 5/14
U.S. Cl. 350—96.13 **5 Claims**



1. An optical scanning device comprising:
a substrate;
a thin film waveguide path for propagating a light beam, said thin film waveguide path being formed on said substrate;
a waveguide path bundle formed integrally with and of the same material as said thin film waveguide path on said substrate, each waveguide path of said waveguide path bundle having a light entrance portion and a light exit portion, and being wider in the light exit portion thereof than in the light entrance portion thereof onto which the light beam propagated in said thin film waveguide path in incident;
first means for deflecting a light beam propagated in said thin film waveguide path; and
second means for condensing a light beam deflected by said first means to guide deflected light beam onto said light entrance portion of said waveguide path bundle.

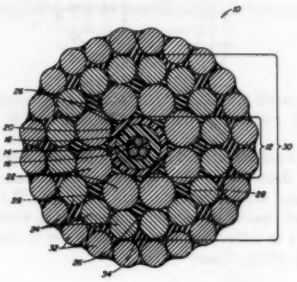
4,523,804

ARMORED OPTICAL FIBER CABLE

Robert E. Thompson, Roanoke, Va., assignor to Chevron Research Company, San Francisco, Calif.

Filed Aug. 17, 1982, Ser. No. 408,975
Int. Cl.³ G02B 5/14
U.S. Cl. 350—96.23 **37 Claims**

1. An armored optical cable suitable for use in an environment which subjects said cable to repeated longitudinal elongation and relaxation forces, said cable comprising:
a substantially non-deformable central core element;
at least six substantially solid elements would helically around said central element in a given handedness;
at least twice the number of said at least six elements of inner armor wires wound around and contacting said at least six elements of the same handedness in a unilay helical configuration, said at least six elements and said inner armor



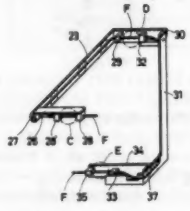
wires being fabricated around said central core element at the same time wherein the elements and the wires of the same handedness and the central core element form a central bundle, said central bundle containing at least one jacketed optical fiber; and
a plurality of outer armor wires contacting said inner armor wires, said outer armor wires wound in an opposite helical handedness to the handedness of said inner armor wires such that the torques exerted by said inner armor wires and said outer armor wires are substantially balanced.

4,523,805

DEVICE FOR TRANSFERRING INFORMATION THROUGH FIBEROPTIC BUNDLES WITHOUT DISTORTION OF INFORMATION TRANSFERRED THERETHROUGH

Masato Nagashima; Mikizo Katsuyama, both of Kyoto, and Masahiro Yamamoto, Shiga, all of Japan, assignors to Dainippon Screen Manufacturing Co., Ltd., Kyoto, Japan

Filed Jun. 24, 1982, Ser. No. 391,735
Claims priority, application Japan, Jul. 3, 1981, 56-104680
Int. Cl.³ G02B 5/14
U.S. Cl. 350—96.24 **6 Claims**



1. A moveable joint for an optical fiber support arm arranged so that bending of the arm imposes only twisting forces, and not bending forces, on the optical fiber comprising:
(1) an optical fiber comprising;
(a) a first portion that extends generally in a first direction,
(b) a second portion that extends generally in a second direction, the second direction being at a predetermined right angle to the first direction, and

(c) a third portion consisting of the portion of the optical fiber between the first portion and the second portion, and

(2) a jointed optical fiber arm comprising;

(a) a first support member extending generally in the first direction, and supporting the first portion of the optical fiber,

(b) a second support member extending generally in the second direction, and supporting the second portion of the optical fiber,

(c) joint means for joining the first support member and second support member, and for allowing rotation of the second support member with respect to the first support member, and

(d) the joint means limiting the rotation of the second support member to the plane containing the second support member and lying at the predetermined right angle to the first support member, whereby movement of the second support member with respect to the first support member causes substantially no additional bending or unbending of the optical fiber.

4,523,806

METHOD AND APPARATUS FOR RESTORING THE LIGHT TRANSMITTANCE OF AN IMAGE-TRANSMITTING OPTICAL FIBER BUNDLE USED IN A FIBER OPTIC ENDOSCOPE

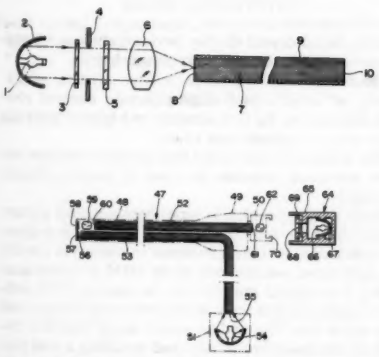
Takuo Kojima, and Kuniaki Ishibashi, both of Saitama, Japan, assignors to Fuji Photo Optical Co., Ltd., Saitama, Japan

Filed Feb. 17, 1982, Ser. No. 349,619

Claims priority, application Japan, Feb. 17, 1981, 56-22082; Jan. 20, 1982, 57-005907

Int. Cl.³ G02B *5/14*

U.S. Cl. 350—96.25 **3 Claims**



1. A method of maintaining the light transmittance of an image-transmitting optical fiber bundle which has been exposed to X-ray irradiation, which comprises exposing said image-transmitting optical fiber bundle through one end to visible light radiation when the bundle has received about one roentgen unit of X-ray irradiation.

4,523,807

METHOD FOR MAKING A MEMBER HAVING MICROSTRUCTURE ELEMENTS ARRANGED THEREON

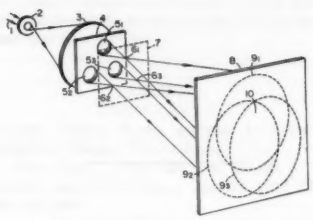
Takashi Suzuki, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 433,143, Oct. 6, 1982, abandoned, which is a continuation of Ser. No. 108,031, Dec. 28, 1979, abandoned. This application May 25, 1984, Ser. No. 614,398

Claims priority, application Japan, Dec. 29, 1978, 53-165092

Int. Cl.³ G02B *27/00*

U.S. Cl. 350—128 **11 Claims**



1. A method of making a microstructure member, comprising:

providing light beams which are emitted from an arrangement of two or more light sources and which are interferable with one another;

superposing the light beams axially without re-imaging to produce equally spaced interference fringes having two-dimensional monotonous periodicity; and

exposing a recording medium to the produced interference fringes with a fixed relative position between the interference fringes and the recording medium.

4,523,808

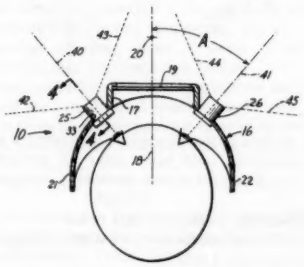
WELDING HELMETS WITH AUXILIARY OPTICAL VISION SYSTEMS

Charles G. Miller, deceased, late of Pasadena (by Ann S. Miller, executrix); James B. Stephens, La Crescenta, and Charles Youngberg, Altadena, all of Calif., assignors to Wilson Sales Company, Inc., South El Monte, Calif.

Filed Jul. 12, 1983, Ser. No. 513,112

Int. Cl.³ G02B *25/04, 7/02;* A61F *9/06*

U.S. Cl. 350—146 **17 Claims**



1. In a welding helmet comprising a shell mountable to a welder's head, said helmet having an opaque wall extending in front of and to the sides of the welder's face to shield him from a welding arc or flame in front of him, and from arcs or flames to the side of him, said shell having a window occupied by a welder's glass to enable the welder to look forwardly along a

forward axis at work in front of him while an arc or flame is burning, the improvement comprising:

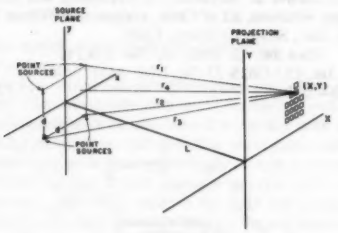
to the side of said window and passing through said wall, a reducing auxiliary vision system through said helmet having the optical property of reducing an object which is located about 30 inches from the hood to an apparent distance significantly greater than the distance to said object, said auxiliary system having an optical axis directed at an angle to said forward axis, whereby to provide visibility under normal illumination of regions substantially to the side of said forward axis.

4,523,809

METHOD AND APPARATUS FOR GENERATING A STRUCTURED LIGHT BEAM ARRAY

John Taboada, San Antonio, Tex., and Bruce R. Altschuler, Dayton, Ohio, assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Aug. 4, 1983, Ser. No. 520,356
Int. Cl.³ G02B *27/10*
U.S. Cl. 350—163 **15 Claims**



1. A method of simultaneouslu generating a space volume-filling structured light beam array for projection upon an object in non-contact surface metrology, comprising the steps of:

(a) generating a coherent light beam;

(b) projecting said beam with slight divergence through a predetermined plane;

(c) partitioning said beam received at said plane into four light beam segments of predetermined spacing and pattern;

(d) generating from said beam segment pattern, a two-dimensional array comprising an interference pattern of said beam segments; and

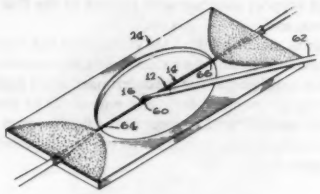
(e) projecting said array in a direction orthogonal to the plane of the array onto said object.

4,523,810

OPTICAL FIBER COUPLING METHOD AND APPARATUS

Willis C. Goss, Altadena; Mark D. Nelson, Montrose, and John M. McLauchlan, Pasadena, all of Calif., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Jan. 26, 1982, Ser. No. 342,828
Int. Cl.³ G02B *5/14*
U.S. Cl. 350—320 **6 Claims**



1. A method for coupling a pair of optical fibers, comprising:

holding said fibers parallel and adjacent to one another; and

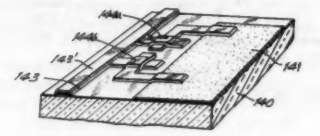
applying a liquid to said fibers which is hydrophillic to said fibers, by moving a liquid-gas interface along the length direction of the fibers to zip them together.

4,523,811

LIQUID CRYSTAL DISPLAY MATRIX INCLUDING A NON-LINEAR DEVICE

Tadashi Ota, Suwa, Japan, assignor to Kabushiki Kaisha Suwa Seikosha, Tokyo, Japan

Filed Jan. 15, 1982, Ser. No. 339,526
Claims priority, application Japan, Jan. 16, 1981, 56-4850; Aug. 25, 1981, 56-132904; Sep. 4, 1981, 56-139549
Int. Cl.³ G02F *1/13*; H01C *7/10, 7/13*
U.S. Cl. 350—333 **9 Claims**



1. A matrix liquid crystal display device including a metal-insulator-metal (MIM) construction, comprising:

a first substrate,

a plurality of liquid crystal display picture element electrodes disposed on the first substrate and spaced apart in a matrix array of columns and rows;

a plurality of leads formed on the first substrate between one of the associated columns or rows of picture element electrodes;

a non-linear device coupled in series between each picture element electrode and the associated lead, the non-linear device including two MIM switches connected in parallel with each other, wherein one of the MIM switches comprises a lower metal thin film on the surface of the substrate coupled to said lead, an insulator thin film on said lower metal thin film and an upper metal thin film disposed on the insulator thin film and including a lead portion coupled to the associated picture element electrode; and the other MIM switch comprises a lower metal thin film including a MIM portion and a lead portion on said substrate, said lead portion coupled to the associated picture element electrode and said MIM portion in the region between said lead and said picture element electrode, an insulator film on said lower metal thin film and

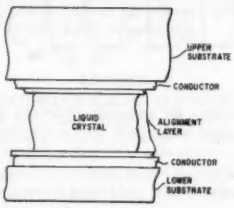
an upper metal thin film disposed on the MIM portion of said insulator and the lower metal thin film and coupled to said lead.

4,523,812

PLASTIC LIQUID CRYSTAL DEVICES WITH UNEQUAL SUBSTRATE THICKNESSES

Perry A. Penz, Richardson, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Nov. 23, 1982, Ser. No. 444,264
Int. Cl.³ G02F *1/13*
U.S. Cl. 350—334 **7 Claims**



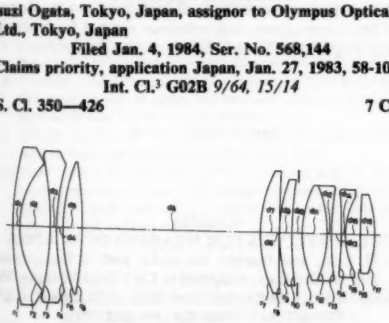
1. A liquid crystal device comprising:
first and second substrates each comprising a birefringent material;
first and second conductor layers, said conductor layers respectively being disposed on respective innerfaces of said respective substrates;
first and second alignment layers respectively disposed on said first and second conductor layers;
perimeter seal means interposed between said first and second substrates and sealing the perimeters thereof together to define a cavity between said first and second substrates with said first and second conductor layers and said first and second alignment layers being disposed in respective opposing relationship with respect to each other;
a liquid crystal material filling the cavity defined between said first and second substrates; and
the respective thicknesses of said first and second substrates being of unequal magnitudes of a degree sufficient to prevent the appearance of obtrusive interference colors.

4,523,813

ZOOM LENS SYSTEM

Yasuzi Ogata, Tokyo, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Jan. 4, 1984, Ser. No. 568,144
Claims priority, application Japan, Jan. 27, 1983, 58-10544
Int. Cl.³ G02B *9/64, 15/14*
U.S. Cl. 350—426 **7 Claims**



1. A zoom lens system comprising a front lens group having negative refractive power and a rear lens group having positive refractive power, said rear lens group consisting of a positive lens component, a positive meniscus lens component having a convex surface on the object side, a positive meniscus cemented doublet composed of a biconvex lens element and a biconcave lens element, a negative lens component and a positive lens component, said zoom lens system being so adapted as to perform zooming by varying the airspace reserved between said front and rear lens groups, and to satisfy the following conditions (1) and (2):

$$0.47<r_{15}/f_R<0.53 \quad (1)$$

$$0.1<n_7-n_6 \quad (2)$$

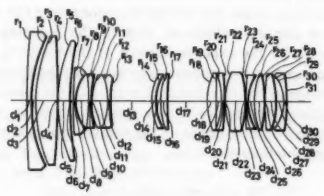
wherein the reference symbol r_{15} represents radius of curvature on the image side surface of the negative lens element arranged in said rear lens group, the reference symbols n_6 and n_7 designate refractive indices of both the lens elements respectively of the positive meniscus cemented doublet arranged in said rear lens group and the reference symbol f_R denotes focal length of said rear lens group.

4,523,814

ZOOM LENS

Sadao Okudaira, Tokyo, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 21, 1983, Ser. No. 506,266
Claims priority, application Japan, Jun. 23, 1982, 57-108168; Mar. 9, 1983, 58-38625
Int. Cl.³ G02B *9/64, 15/18*
U.S. Cl. 350—427 **11 Claims**



1. A zoom lens comprising, in order from the object, a first lens group having a positive refractive power, a second lens group having a negative refractive power, a third lens group having a positive refractive power and a fourth lens group having a positive refractive power, said first through fourth lens group being independently moved in an axial direction to vary the overall focal length, said zoom lens meeting the following conditions:
(1) $0.25F_W<F_I<0.45F_W$,
(2) $1.65<n_{IV}$, and
(3) $1.2f_{BW}<f_{BT}<0.95f_{BM}$
where F_W is the overall focal length at the minimum end,
F_I is the focal length of the first lens group,
n_{IV} is the average refractive index, at d-line, of the lens elements constituting the fourth lens group,
f_{BW} and f_{BT} are the backfocuses at the minimum and maximum ends of the overall focal length, respectively,
f_{BM} is the backfocus at an intermediate value of said overall focal length between said minimum and maximum ends.

4,523,815

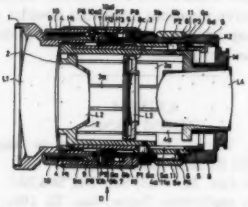
ZOOM LENS BARREL FOR MACROFOCUSING

Yasumasa Tomori, Sakadoshi, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 1, 1983, Ser. No. 510,457
Claims priority, application Japan, Jul. 27, 1982, 57-113529[U]
Int. Cl.³ G02B *7/10*
U.S. Cl. 350—430 **10 Claims**

1. A zoom lens barrel having lens assemblies, including a focusing lens assembly and a variable power lens assembly comprising a mount ring for connecting the lens barrel to a

camera body, a zooming ring rotatable on the mount ring for adjusting the focal length of the lens assemblies, and a focusing ring rotatable on the mount ring for effecting focusing for normal photographing as well as for macro-photographing, the improvement comprising a guide means between the mount ring and the focusing ring for enabling the focusing ring to rotate for normal photographing, to move in the axial direction at the terminal position of the rotation in the shortest object distance position, and to further rotate after the axial movement for macro-photographing, a connecting ring which ro-



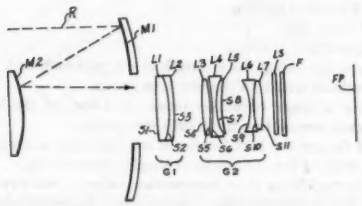
tates to move only the focusing lens assembly, a macrohelicoid ring which rotates to move the whole lens assemblies while maintaining a predetermined spatial relationship therebetween, and a switching means for selectively connecting the connecting ring or the macrohelicoid ring to the focusing ring in accordance with the axial movement of the focusing ring, so that the connecting ring rotates together with the focusing ring within a range of the rotation for focusing of the focusing ring, and that the macrohelicoid ring rotates together with the focusing ring within a range of the rotation for macro-photographing of the focusing ring.

4,523,816

CATADIOPTRIC LENS

Melvyn H. Kreitzer, Cincinnati, Ohio, assignor to Vivitar Corporation, Santa Monica, Calif.

Filed Aug. 12, 1983, Ser. No. 522,519
Int. Cl.³ G02B *17/08*
U.S. Cl. 350—444 **9 Claims**



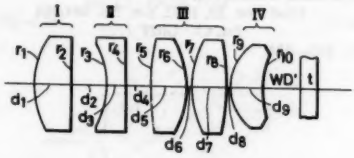
1. A catadioptric lens having object and image sides comprising a first component having a first reflective surface with a central aperture therethrough, a second component having a reflective surface disposed on the object side of said first component, said second component arranged to reflect light to refractive lens groups on the image side of said second component, said first and second components being arranged in fixed relationship, a first lens group of positive power disposed to the image side of said second component, and a second refractive lens group of negative power disposed on the image side of said first refractive group, said second refractive group being axially movable to focus said lens.

4,523,817

LENS SYSTEM FOR OPTICALLY RECORDED DISKS

Juro Kikuchi, Hachiooji, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Nov. 12, 1982, Ser. No. 440,860
Claims priority, application Japan, Nov. 18, 1981, 56-183742
Int. Cl.³ G02B *9/60, 21/02*
U.S. Cl. 350—465 **10 Claims**



1. A lens system for optically recorded disks comprising first, second, third and fourth lens components in the order from the light-source side wherein said first lens component has positive refractive power, said second lens component has negative refractive power, said third lens component has positive refractive power and consists of two positive lenses, and said fourth lens component has a concave surface on the disk side and has positive refractive power, said lens system for optically recorded disks being arranged to fulfill the following conditions:

(1) $0<r_1<|r_2|$

(2) $r_3<0$, $|r_3|<|r_4|$

(3) $f_1/f>0$

(4) $f_{12}/f<0$

(5) $0.6<f_{34}/f<1$

wherein reference symbols r_1 and r_2 respectively represent radii of curvature of the surface on the light-source side and surface on the disk side of the first lens component, reference symbols r_3 and r_4 respectively represent radii of curvature of the surface on the light-source side and surface on the disk side of the second lens component, reference symbol f represents the focal length of the lens system as a whole, reference symbol f_1 represents the focal length of the first lens component, reference sumbol f_{12} represents the total focal length of the first and second lens components, and reference symbol f_{34} represents the focal length of the third and fourth lens components.

4,523,818

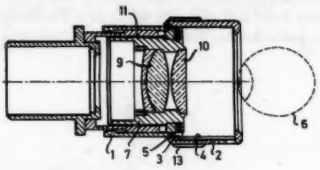
OCULAR EYECUPS FOR WEARERS OF GLASSES

Walter H. Lang, and Joachim Hornschu, both of Konigsbronn, Fed. Rep. of Germany, assignors to Carl-Zeiss-Stiftung, Heidenheim/Brenz, Oberkochen, Fed. Rep. of Germany

Filed Jun. 9, 1983, Ser. No. 502,725
Claims priority, application Fed. Rep. of Germany, Jun. 24, 1982, 3223538
Int. Cl.³ G02B *23/16*
U.S. Cl. 350—579 **2 Claims**

1. An eyecup for adjustment of pupil coincidence for an ocular of an optical viewing instrument, characterized by the fact that a rigid tubular eyecup (2) is adapted for sliding engagement to the housing (1) of the ocular, a snap-ring friction

element (5) recessed in said housing for retaining a selected position of continuous axial adjustment, the eyecup (2) having



a longitudinal slot (4) for keyed reception of at least one guide part (3) carried by the ocular housing (1).

4,523,819

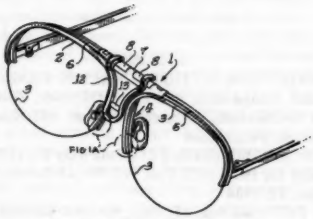
EYEGLASSES WITH EXCHANGEABLE LENSES

Franz Dianitsch, Linz, and Anton Pschebezin, Haid, both of Austria, assignors to Optyl Eyewear Fashion International Corporation, Norwood, N.J.

Filed May 24, 1983, Ser. No. 497,645

Int. Cl.³ G02C *1/00, 1/04, 5/00*

U.S. Cl. 351—106 **7 Claims**



1. Eyeglasses comprising:

a frame means;

a pair of exchangeable lenses carried by the frame means;

partial rims on the frame means partially surrounding the lenses;

grooves formed in edges of the lenses;

a thread projecting into the grooves and cooperating with the partial rims to support and to retain the lenses;

an upper bridge on said frame means and joining the partial rims;

a lower bridge means on said frame means disposed beneath the upper bridge and joining the partial rims;

a retainer clip pivoted on the upper bridge and movable between an upper open position and a lower locked position with the lower bridge means;

a thread section of the thread located at the lower bridge means and spanning the partial rims; and

tension means associated with the retainer clip at the lower bridge means to engage the thread section and to force the thread to pull taut and to remain taut when the retainer clip is in its locked position.

4,523,820

PROCEDURE AND MEANS FOR ESTABLISHING AND RECORDING ERRORS OF THE EYE

Kari A. Kaakinen, Karankakatu 15, SF-87500 Kajaani 50, Finland

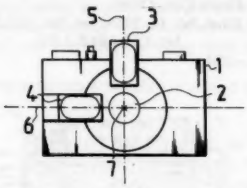
Filed May 12, 1982, Ser. No. 377,520

Claims priority, application Finland, May 19, 1981, 811541

Int. Cl.³ G03B *29/00;* A64B *3/14*

U.S. Cl. 351—206 **7 Claims**

1. A method for establishing and recording errors of the eye which comprises simultaneously photographing from a distance of at least about one meter from the eye the cornea, corneal reflexes and retinal reflexes of the eye in at least two different meridians of the eye using a camera having at least



one objective lens and at least one light source, the objective lens and light source being disposed in different meridians of the eye.

4,523,821

DEVICE FOR EXAMINING ANTERIOR SECTIONS OF THE EYE

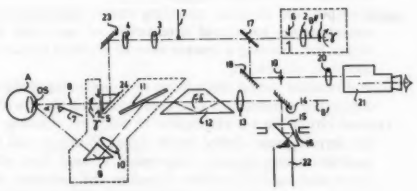
Walter Lang; Dieter Müller; Franz Muchel, all of Königsbronn; Roland Wanner, Oberkochen, and Peter Niesel, Bollingen, all of Fed. Rep. of Germany, assignors to Carl-Zeiss-Stiftung, Heidenheim, Fed. Rep. of Germany

Filed Dec. 7, 1982, Ser. No. 447,537

Claims priority, application Fed. Rep. of Germany, Dec. 18, 1981, 3150124

Int. Cl.³ A61B *3/10, 3/14*

U.S. Cl. 351—214 **5 Claims**

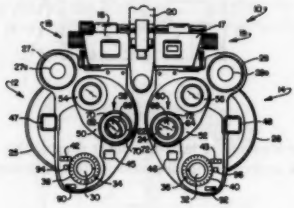


1. A device for examining anterior portions of the eye by a slit-lamp instrument developed on the Scheimpflug principle, in which a fixation object (7) for the eye of a test subject and a graticule (19) for the localizing of the corneal reflex are provided in the illumination beam path, characterized by the fact that in the imaging-beam path an opto-electronic image converter (22) is provided to which an electronic computer for picture data-processing is connected and that, in order to produce different optical meridian sections in the eye of the test subject (a) the opto-electronic image converter (22) is stationary, and (b) in the imaging-beam path a reflecting prism (9) and a reversing prism (12) are each rotatable about the optical axis (8), the respective rotations of the reflecting prism and of the reversing prism being so coupled as to maintain a stationary orientation of the image at the opto-electronic image converter (22) regardless of the instantaneous rotary orientation of the reflecting prism.

4,523,822
REFRACTOR WITH OPTICALLY ENCODED CYLINDER AXIS POSITION

Marlin O. Thurston, Columbus, Ohio, assignor to R. H. Burton Company, Grove City, Ohio

Filed Jul. 14, 1983, Ser. No. 513,707
Int. Cl.³ A61B 3/02
U.S. Cl. 351—234 20 Claims



1. A refractor, comprising:

a housing having a patient eye position for viewing along a sight axis extensible therethrough;

a cylinder lens assembly including a plurality of rotatably movable cylinder lens components;

means for positioning select said cylinder lens components into an aligned orientation with said sight axis;

hand manipular axis control means engageable with a positioned said cylinder lens component for effecting the rotation to a select cylinder axis orientation;

first position absolute encoding means responsive to said axis control means positions for deriving a unique first position signal corresponding with the instantaneous said cylinder axis orientation of said positioned cylinder lens;

a cross-cylinder assembly operative in axis and power modes mounted upon said housing and having cross-cylinder lens means with a select power axis, rotatable lens mount means supporting said cross-cylinder lens means and movable to position said cross-cylinder lens means in alignment with said sight axis, motor means having an output coupled in driving relationship with said rotatable lens mount means and energizable in response to a drive signal to effect the rotation thereof;

second position absolute encoding means responsive to the instantaneous rotational orientation of said lens mount means for deriving a unique second position signal corresponding therewith;

digital readout means responsive to a digital input signal for displaying a numeric value corresponding therewith; and

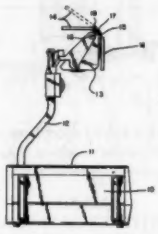
control circuit means responsive to said first position signal for deriving said digital input signal to effect said digital readout means display, responsive to said first position signal and second position signal in the presence of said axis mode condition for deriving a said drive signal effecting the driven movement of said lens mount means positioning said cross-cylinder lens means select power axis in an orientation displaced 45° from said select cylinder axis orientation, and responsive to said power mode condition for deriving a drive signal effecting the driven movement of said lens mount means positioning said cross-cylinder lens means select power axis in alignment with said select cylinder axis orientation.

4,523,823
LIGHT BLOCKING PANEL FOR OVERHEAD PROJECTORS

Mary E. F. Roope, 14547 Farmcrest Pl., Colesville, Md. 20904

Filed Apr. 5, 1984, Ser. No. 596,917
Int. Cl.³ G03B 21/14
U.S. Cl. 353—97 4 Claims

1. In an overhead projector of the type having an elevated projection head including a forward projection lens and a light box below the projection head having a top horizontal transparent stage on which transparencies are placed, the combination with said projection head of a gravity responsive opaque panel of a size and shape to substantially cover the front of said projection head and said lens when in a free-hanging vertical position, and a flexible hinge means interconnecting the opaque

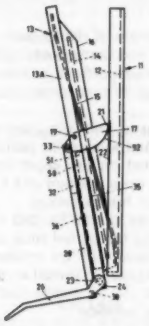


panel and projection head whereby a user of the overhead projector can manually flip the opaque panel from its free-hanging vertical position in front of the projection lens to an elevated inactive position of the panel away from the front of the lens where the panel will again be held stationary by the influence of gravity.

4,523,824
DEVICE FOR A PHOTOGRAPHIC CAMERA

Karl Gfeller, Langwiesen, and Peter Dättwyler, Diessenhofen, both of Switzerland, assignors to Sinar AG Schaffhausen, Feuerthalen, Switzerland

PCT No. PCT/CH83/00106, § 371 Date May 15, 1984, § 102(e) Date May 15, 1984, PCT Pub. No. WO84/01440, PCT Pub. Date Apr. 12, 1984
PCT Filed Sep. 15, 1983, Ser. No. 610,984
Claims priority, application Switzerland, Oct. 1, 1982, 5745/82
Int. Cl.³ G03B 17/44
U.S. Cl. 354—161 13 Claims

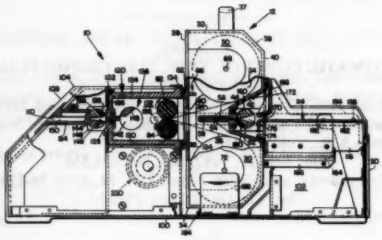


1. A device designed for a photographic camera, having a frame-type camera back which defines a bearing face for a photographic negative material or for a cassette containing said negative material, and having a pressure means located behind said camera back and movably connected thereto by means of springs that strive to force said pressure means toward said bearing face of said camera back, characterized by at least one retarding means (17–52) to damp movements of said pressure means (13) through the force of said springs, dependent upon the actual speed of movement.

4,523,825
FILM PROCESSING APPARATUS AND SYSTEM

Philip Norris, North Reading, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Jun. 14, 1984, Ser. No. 620,627
Int. Cl.³ G03D 5/06
U.S. Cl. 354—301 32 Claims



1. A film processing apparatus having processing and non-processing modes of operation, said apparatus being configured for use with a cassette holding at least a processing sheet yieldably carrying, on one surface thereof, a substantially uniformly distributed supply of a film processing liquid, the cassette being of the type having a housing formed of vapor and gas impervious material and including an entry opening, through which an exposed film unit advanced along a film entry path is adapted to move into the cassette housing, and an exit opening through which the film unit and processing sheet are adapted to be advanced simultaneously from the housing, along an exit path of travel, in superposed relation with the processing liquid carrying surface facing a surface of the film unit adapted to be wetted with the processing liquid to initiate film processing, said processing apparatus comprising:

means for receiving and supporting such a cassette;

means for advancing the processing sheet and a film unit along the exit path of travel while applying compressive pressure thereto to facilitate wetting the film unit surface with the processing liquid;

entry sealing means having a non-processing mode of operation for blocking the cassette entry opening to prevent vapor and gas transmission therethrough, and a processing mode of operation for unblocking the entry opening to provide access thereto for a film unit being advanced along the entry path of travel; and

exit sealing means having a non-processing mode of operation for blocking the cassette exit opening to prevent vapor and gas transmission therethrough so as to cooperate with said entry sealing means for isolating the processing sheet from the ambient atmosphere surrounding said apparatus, and a processing mode of operation for unblocking the exit opening to provide access to the exit opening for accommodating advancement of the processing sheet and film unit along the exit path of travel.

4,523,826
AUTORADIOGRAPHY APPARATUS INCLUDING A SLIDE RACK

Nurten N. Gunduz, and Dincer H. Gunduz, both of Pittsburgh, Pa., assignors to University of Pittsburgh, Pittsburgh, Pa.

Division of Ser. No. 216,295, Dec. 15, 1980, Pat. No. 4,435,063.
This application Nov. 19, 1982, Ser. No. 443,035
Int. Cl.³ G03D 3/00, 13/08
U.S. Cl. 354—307 17 Claims

1. Autoradiography apparatus comprising

a rack member for holding a multiplicity of specimen-bearing slides having an upper frosted portion,

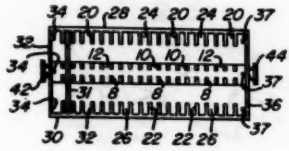
said rack member having a base portion, an upper portion and a connecting portion,

said base portion having a plurality of upwardly projecting spaced first separator members defining a series of first slide-receiving slots therebetween,

said first slide-receiving slots being generally centrally positioned in said base portion,

said base portion having an upstanding peripheral wall with sidewall portions resisting transverse movement of said slides out of said first slide-receiving slots and endwall portions,

said upper portion having a plurality of spaced second separating members defining a series of second slide-receiving slots generally aligned with and spaced from said first slide-receiving slots, and

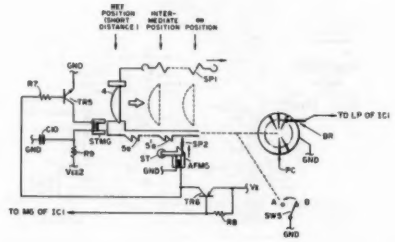


said second separating members being spaced above the base of said first slide-receiving slots a distance sufficient to place said second separating members in contact with said slide frosted portion when said slide is in said rack, whereby slides disposed within said rack member will be engaged solely by their upper frosted portion and lower portion.

4,523,827
CAMERA

Makoto Masunaga, and Hideo Taka, both of Tokyo, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 1, 1981, Ser. No. 298,532
Claims priority, application Japan, Sep. 8, 1980, 55-125111
Int. Cl.³ G03B 3/00
U.S. Cl. 354—400 19 Claims



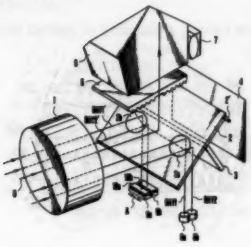
1. A camera comprising a distance detecting system for repeatedly detecting an object distance; a photographic lens control system for stopping the displacement of a photographic lens when said photographic lens reaches a position represented by distance data obtained by said distance detecting system, during the course of displacement from a predetermined set position of said photographic lens by actuating means; and controlling means for prohibiting initiation of the displacement of said photographic lens by said actuating means until effective distance data is obtained from said distance detecting system or until the number of distance detecting operations reaches a predetermined value.

4,523,828

FOCUS DETECTING DEVICE

Masatake Kato, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 1, 1984, Ser. No. 616,532
Int. Cl.³ G03B 7/08
U.S. Cl. 354—403 **6 Claims**



1. A device for detecting the focusing state of an objective lens for a light of standard wavelength, comprising:

projecting means for projecting lights of different wavelengths from each other onto an object;

sensing means for sensing the reflected lights from the object;

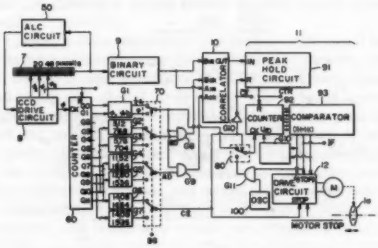
discriminating means for detecting the focusing states of the objective lens for the respective wavelengths of light based on the outputs of said sensing means and for computing the focusing state of the objective lens for the light of standard wavelength from the focusing states of the objective lens for the different wavelengths of light.

4,523,829

AUTOMATIC FOCUS DETECTING DEVICE

Mitsuo Eguchi; Kiyoharu Tagawa; Hitoshi Ogawa; Mikio Bandai, and Nobuharu Nagashima, all of Saitama, Japan, assignors to Fuji Photo Optical Co., Ltd., Saitama, Japan

Filed Feb. 21, 1984, Ser. No. 581,678
Claims priority, application Japan, Mar. 11, 1983, 58-41074
Int. Cl.³ G03B 3/00
U.S. Cl. 354—406 **12 Claims**



1. An automatic focus detecting device which is used with a camera having a taking lens comprising a focusing lens system, a zooming lens system and a master lens system for detecting the defocusing amount of said focusing lens system from the amount of shift occurring between two images of an object, said two images being formed by light beams passing through two different areas in said zooming lens system and moving in opposite directions as said focusing lens system moves along its optical axis, said device comprising:

an image sensor for converting the intensity distributions of said two images formed thereon into time sequence video signals, respectively;

correlation means for extracting said time sequence video signals from said image sensor to be stored therein in order to detect the amount of shift occurring between said two images; and

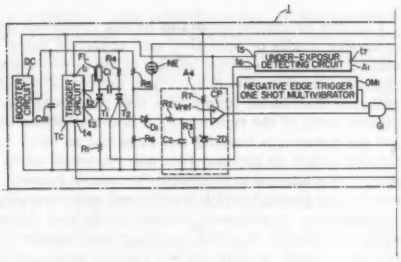
extraction control means operable in at least first and second operation modes for extracting time sequence video signals of a narrow image every "M" (≧o) pixels in the first operation mode and a wide image every "N" (>M) pixels in the second operation mode.

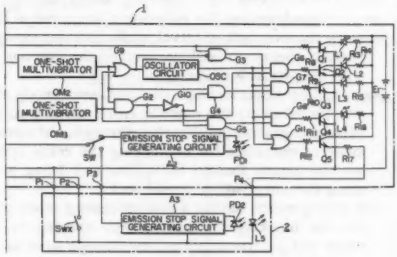
4,523,830

AUTOMATIC CONTROL TYPE ELECTRONIC FLASH APPARATUS

Yoshikazu Iida, Chigasaki; Nobuyoshi Hagyuda, and Hiroshi Hasegawa, both of Tokyo, all of Japan, assignors to Nippon Kogaku K.K., Tokyo, Japan

Filed Sep. 27, 1982, Ser. No. 424,336
Claims priority, application Japan, Oct. 29, 1981, 56-173471
Int. Cl.³ G03B 7/16, 15/02
U.S. Cl. 354—416 **3 Claims**





1. An automatic control type electronic flash apparatus comprising:

(a) means for emitting flashlight, which means include a flash discharge tube, a first coil connected in series therewith, and a main capacitor for supplying a discharging current to said flash discharge tube;

(b) flashlight emission stopping means for receiving the flashlight emitted by said flashlight emitting means and reflected by an object to be photographed and for stopping emission of the flashlight by said flashlight emitting means when a quantity of the flashlight received reaches a predetermined value;

(c) integrating means for integrating a current corresponding to the flashlight emitted by said flashlight emitting means instead of the flashlight reflected by the object, said integrating means including a second coil magnetically coupled to said first coil, and an integrating circuit for integrating a current associated with a current generated in said second coil;

(d) comparing means for comparing an integrated value

from said integrating means with a reference value and for generating a first output when the integrated value is smaller than the reference value and a second output when the integrated value is greater than the reference value; and

(e) indicating means for indicating an over-exposure in response to the first output.

4,523,831

COPYING APPARATUS WITH OPENABLE UPPER HOUSING

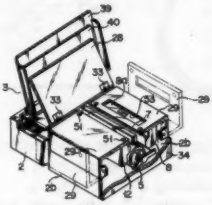
Makoto Yokoo, Tokyo; Yoshitsugu Nakatomi, Yokohama, and Shinichi Hashimoto, Fujisawa, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Filed May 17, 1982, Ser. No. 379,045

Claims priority, application Japan, May 18, 1981, 56-74568

Int. Cl.³ G03G *15/00*

U.S. Cl. 355—3 R **13 Claims**



4. A copying apparatus which comprises:

a housing having an opening at the top;

a document table disposed on the top of the housing and having a glass platen on which an original document is to be laid, said document table being reciprocally movable in one direction between a first position wherein the document table fully covers the top of the housing and a second position wherein the document table partially covers the top of the housing, said document table being pivotal around an axis extending in said one direction between the first position and a third position wherein the top of the housing is fully opened;

a copying mechanism disposed inside said housing to reproduce on a sheet of copying paper an image of the original document laid on the glass platen; and

a protective member attached to the housing for protecting the copying mechanism, said protective member being pivotal around an axis perpendicular to said one direction between a third closed position where the protective member is located over the copying mechanism and a second opened position wherein the protective member fully exposes the copying mechansim when the document table is in the first position, wherein

said protective member includes first and second protective covers severally pivotally mounted on said housing.

4,523,832

SHEET TRANSPORT

John R. Strutt, Shefford, and Anil G. Bhagwat, Hemel Hempstead, both of England, assignors to Xerox Corporation, Stamford, Conn.

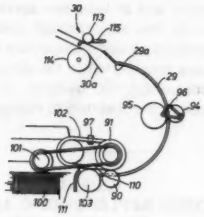
Filed Sep. 20, 1983, Ser. No. 534,052

Claims priority, application United Kingdom, Sep. 21, 1982, 8226811

Int. Cl.³ G03G *15/00*; B65H *5/00*

U.S. Cl. 355—3 SH **4 Claims**

1. A sheet transport for reversing the direction of travel of a sheet, comprising a direction reversing guide consisting only of an outer, curved surface, spaced drive rolls for conveying sheets along said surface, said spaced drive rolls including input and disengageale output drive nips spaced less than the dimension of travel of the smallest sheet intended to be transported from a single intermediate drive nip, and registration means, said registration means includes a buckle inducing throat formed between an end portion of said guide and an opposed guide surface directed towards said output nip, and one or more retractable registration stops for registering a



sheet in the disengaged nip, said end portion of said guide having a proturberance arranged to direct a sheet out of alignment with the disengaged nip and against said opposed guide surface, whereby a sheet fed against the registration means is buckled about said protuberance, said output nip being subsequently reengaged for feeding the sheet in synchronism with a developed image on a photoreceptor.

4,523,833

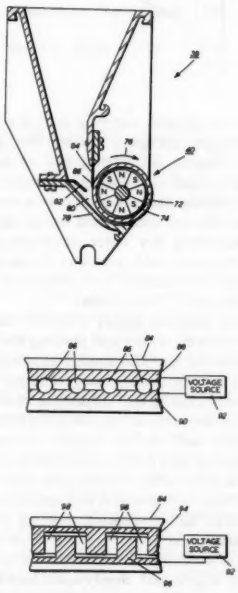
DEVELOPER ROLLER METERING BLADE

Thomas B. Jones, Brighton, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Oct. 28, 1983, Ser. No. 546,266

Int. Cl.³ G03G *15/09*

U.S. Cl. 355—3 DD **14 Claims**



1. An apparatus for developing a latent image recorded on an image receiving member, including:

a housing defining a chamber for storing a supply of marking particles therein;

means for transporting the marking particles from the chamber in said housing to a development zone closely adjacent to the latent image recorded on the image receiving member;

a member having a free edge thereof contacting said transporting means and at least one aperture therein closely adjacent to the free edge through which a portion of the marking particles on said transporting means pass through prior to being transported to the development zone; and

means for controlling the quantity of marking particles passing through the aperture in said member.

4,523,834

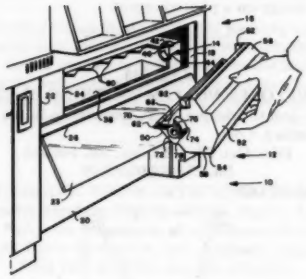
DRY TONER REPLENISHING APPARATUS

Frederick J. Pelda, White Plains, N.Y., and Roderick N. Schmaling, Brookfield Center, Conn., assignors to Pitney Bowes Inc., Stamford, Conn.

Filed Jan. 9, 1984, Ser. No. 569,353

Int. Cl.³ G03G *15/08*

U.S. Cl. 355—3 DD **6 Claims**



1. In a xerographic copying machine having a frame and instrumentalities mounted therein for making xerographic copies of original documents, one of said instrumentalities being a dry toner developing apparatus which utilizes dry toner developing material stored in a storage receptacle located adjacent one end of said frame, apparatus for periodically replenishing dry toner developing material into said storage receptacle, said apparatus comprising:

A. an aperture defined by a portion of said frame adjacent said one end of said frame,

B. a toner material supply container adapted to be removably received within said opening for dispensing developing material into said storage receptacle, said supply container having a dispensing opening and closure means normally closing said dispensing opening,

C. cooperating connecting means on said frame adjacent said aperture and on said supply container for removably connecting said supply container to said frame for limited pivotal movement of said supply container with respect to said frame between first and second positions in the latter of which said dispensing opening overlies said storage container, and

D. means mounted on said frame for engaging said closure means where said supply container is inserted into said opening and is in said first position and for opening said closure means during pivotal movement of said supply container from said first position to said second position, whereby dry toner developing material in said supply container is dispensed by gravity flow through said dispensing opening into said storage receptacle.

4,523,835

Patent Not Issued For This Number

4,523,836

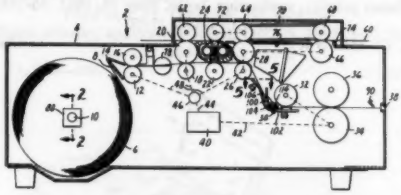
CONTINUOUS COPIER

Robert F. Nepper, North St. Paul; Alan J. Solyntjes, Minneapolis, and Carl W. Abrahamson, Lake Elmo, all of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Jul. 29, 1983, Ser. No. 518,645

Int. Cl.³ G03G *15/00*

U.S. Cl. 355—16 **4 Claims**



1. A copy machine capable of producing extended indeterminate length copies comprising:

a housing including a paper exit;

a supply of continuous copy paper mounted within said housing;

a series of rollers for transporting said paper through said housing and ending in a terminal pair of rollers adjacent said paper exit which engage said paper and transport said paper at a speed in excess of the speed at which said paper is transported by any other of the rollers in said series so that said paper is pulled through said machine by said terminal rollers;

means for sensing the engagement of said paper by said terminal rollers; and

means responsive to said sensing means for selectively applying a drag to said supply of copy paper so that said copy paper is in tension throughout said machine between said terminal rollers and said supply of copy paper.

4,523,837

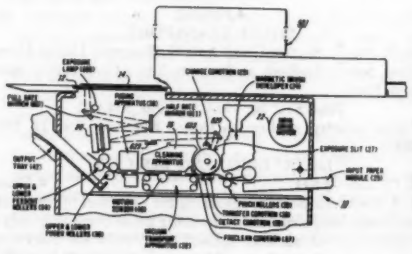
DOCUMENT HANDLING SYSTEM TO ENABLE LARGE DOCUMENT COPYING ON A STANDARD OFFICE COPIER

Russell A. Temple, Sierra Madre; Martin G. Wesseler, Arcadia; David C. Harper, Claremont; Harry F. Eiland, Cerritos, and Robert G. Tellkamp, West Covina, all of Calif., assignors to Xerox Corporation, Stamford, Conn.

Filed Jul. 14, 1983, Ser. No. 513,935

Int. Cl.³ G03B *27/48, 27/50, 27/70*

U.S. Cl. 355—51 **13 Claims**



1. A dual mode document copier comprising:

a first operator station on one side of said copier for presenting to the copier normal and smaller size documents to be copied in a first mode,

a second operator station on the other side of said copier for presenting to the copier normal and larger size documents to be copied in a second mode,

a document handling module being positioned on said one side of said copier away from said first area when said normal and smaller size documents are to be copied and being positioned on said other side of the copier over said first area when normal and larger size documents are to be copied.

4,523,838

IMAGE FORMING APPARATUS

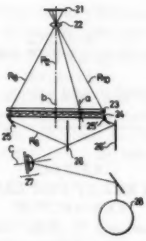
Yu Yamada, Kokubunji, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 3, 1982, Ser. No. 446,496

Claims priority, application Japan, Dec. 8, 1981, 56-197218

Int. Cl.³ G03B *27/48*

U.S. Cl. 355—66 **5 Claims**



1. An image forming apparatus comprising:

first optical means for forming an intermediate image of a desired final image;

second optical means for slit scanning the intermediate image formed by said first optical means to reconstruct the intermediate image, by off-axis imaging, on a light-receiving member, said second optical means including a movable mirror for scanning said intermediate image and a fixed image forming optical system; and

optical means disposed between said first and second optical means for diverting the principal rays from the intermediate image, in a slit scanning sectional plane, in the same direction which is not parallel to the optical axis of said first optical means.

4,523,839

METHOD AND ARRANGEMENT FOR EVALUATING A SERIES OF ORIGINALS FOR COPYING

Bernd Payrhammer, and Bernhard Knör, both of Munich, Fed. Rep. of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Feb. 16, 1983, Ser. No. 466,976

Claims priority, application Fed. Rep. of Germany, Feb. 18, 1982, 3205898

Int. Cl.³ G03B *27/74, 27/80*

U.S. Cl. 355—68 **41 Claims**

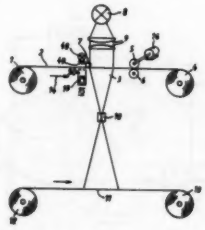
1. A method of evaluating a series of originals prior to reproduction, each of said originals having a pair of substantially parallel edges, and said originals being arranged so that said edges extend in substantial parallelism with one another, said method comprising the steps of:

(a) measuring the transparencies of a series of regions of each original along at least two scanning lines which extend transversely of said edges;

(b) deriving change values representative of significant transparency differences between neighboring regions from the transparency values obtained during the measuring step, said change values including first change values derived from one of said scanning lines and second change values derived from the other of said scanning lines;

(c) evaluating said change values to establish the quality of each original for reproduction; and

(d) generating a signal when first and second change values



are substantially simultaneously derived from respective locations of said scanning lines situated on a common reference line substantially paralleling said edges, said signal indicating a substantial probability of one of said edges being substantially in register with said reference line.

4,523,840

DEVICE FOR BRINGING SHEETS INTO FLAT POSITION

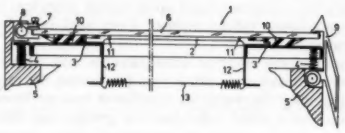
Jens Hagedorn-Olsen, Hornbaek, Denmark, assignor to Océ-Helioprint AS, Kvistgard, Denmark

Filed Jan. 21, 1983, Ser. No. 459,751

Claims priority, application Netherlands, Feb. 1, 1982, 8200356

Int. Cl.³ G03B *27/20*

U.S. Cl. 355—91 **8 Claims**

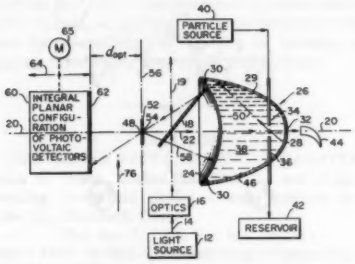


1. A device for bring sheetlike material into flat position in an exposure plane of a reprographic apparatus, comprising a support plate having a transparent resilient body portion presenting an even support surface to receive the sheetlike material, a pressure plate for pressing said material flat against said support surface, said pressure plate being substantially flat and rigid and transparent and being pivoted along an edge thereof for swinging movement between open and closed positions in which, respectively, said pressure plate is out of contact with and in integral contact with said support surface or a sheetlike material resting thereon, said support plate being formed of a transparent resilient resin and said body portion being formed substantially flat but being elastically deformable to a resiliently bowed posture, and yieldable force applying means acting on opposite edge portions of said support plate for normally holding said body portion in a resiliently slightly bowed posture with said support surface slightly convex, said body portion being displaced progressively to a flat posture against the force of said yieldable means by progressive engagement of said pressure plate against said support surface upon movement of the pressure plate from open to closed position.

4,523,841
RADIANT ENERGY RERADIATING FLOW CELL SYSTEM AND METHOD

Albert Brunsting, Miramar, and Walter R. Hogg, South Miami, both of Fla., assignors to Coulter Electronics, Inc., Hialeah, Fla.

Filed Mar. 15, 1979, Ser. No. 20,817
Int. Cl.³ G01N *21/47, 21/64*
U.S. Cl. 356—73 **6 Claims**



1. A method of measuring the directional distributional properties of the radiant energy reradiated from a particle for characterization or the like of said particle and using a known integral configuration of photovoltaic detectors having a sensitive front planar surface which method comprises:

A. Passing the particle through a sensing zone located on the interior of a concave reflector whose configuration is substantially defined by a geometric law, the reflector being symmetrical about an optical axis and having a first focal point also defined by said geometric law, the sensing zone being at said first focal point,

B. directing a beam of incident radiant energy along said axis to said sensing zone,

C. intercepting the radiant energy which has been reradiated by said particle and emerging from the front or said reflector at said planar surface,

D. adjusting the integral configuration along said axis while maintaining its disposition relative to the axis in order to modify the response of said photovoltaic detectors due to said reradiated radiant energy from said particle, and thereafter

E. removing the integral configuration and substituting therefor a composite optical member having the property of separating the received reradiated energy from said particles into plural individual ray groups and directing said ray groups along an equivalent plural number of respective paths, each group having a different direction relative to one another and a direction divergent from the said axis, and measuring the said individual ray groups separately by respective interception of said plural paths.

4,523,842
ASPERIC SURFACE TEST FIXTURE

Edwin M. Allen; Eugene C. Foust; Steven A. Sievert; William C. Fitzgerald, and Max L. Moffitt, all of Ridgecrest, Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Mar. 18, 1983, Ser. No. 476,748
Int. Cl.³ G01M *11/02;* G01N *21/55*
U.S. Cl. 356—124 **11 Claims**

1. A fixture for testing a primary mirror surface test specimen comprising:

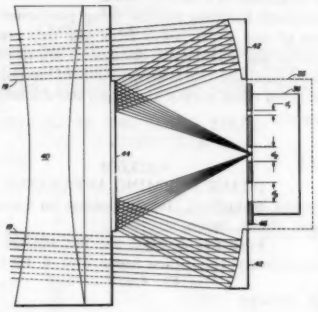
a light source for emitting a light beam along a predetermined optical path;

means for positioning said primary mirror surface test specimen in said optical path;

a corrector lens placed in said optical path between said light source and said positioning means;

a secondary mirror placed in the optical path of light reflected from said primary mirror surface, said secondary mirror re-reflecting said light along an extension of said optical path to a focal plane;

a light detector placed in the extension of said optical path;



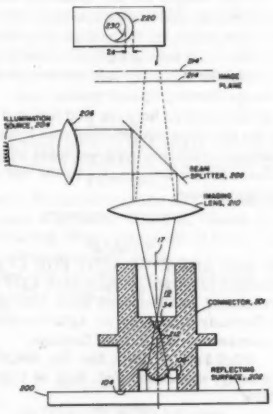
a screen having a plurality of apertures, each aperture having a characteristic size, placed in said focal plane and between said secondary mirror and said light detector; and

a translator connected to said screen.

4,523,843
OPTICAL TEST SET-UP FOR EXPANDED BEAM CONNECTOR

Paul Melman, Newton, and W. John Carlsen, Boston, both of Mass., assignors to GTE Laboratories Incorporated, Waltham, Mass.

Filed Aug. 4, 1983, Ser. No. 520,392
Int. Cl.³ G01B *11/26;* G02B *7/26*
U.S. Cl. 356—127 **8 Claims**



1. A method of testing the accuracy of construction of a molded, integral, transparent, telecentric optical fiber connector body having an optical axis, a reference surface at one end of said body perpendicular to said axis, a lens surface recessed inwardly from said reference surface to provide a focal point on said axis, a cavity at an opposite end of said body for receiving both an optical fiber and separate means for holding and centering said optical fiber, and a truncated conical indentation recessed inwardly from said cavity, said indentation terminat-

ing in a circular flat having a center on or near said focal point, said method comprising the steps of

(a) placing said reference surface of said body on an optically flat reflector with said reference surface parallel to the reflecting surface of said reflector;

(b) illuminating said opposite end of said body with a noncoherent light source;

(c) providing an image plane distant from said opposite end of said body;

(d) focussing light reflected or transmitted from said opposite end onto said image plane, so that

(1) illumination from said noncoherent light source is reflected from said circular flat, and focussed on said image plane, whereby a first image is formed thereon; and

(2) illumination from said noncoherent light source is collimated by said lens surface, reflected from said reflecting surface, focussed by said lens surface to said focal point, and focussed onto said image plane to form a second image thereon; and

(e) measuring the displacement, if any, of said first image with respect to said second image.

4,523,844

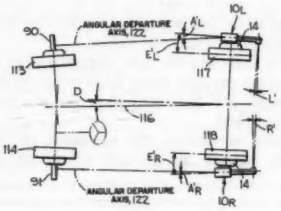
DETERMINING TOE OF REAR AND FRONT VEHICLE WHEELS

Raymond Titsworth, Conway, Ark., and Melvin H. Lill, San Jose, Calif., assignors to FMC Corporation, Chicago, Ill.

Filed Sep. 16, 1982, Ser. No. 418,881

Int. Cl.³ G01B *11/26, 5/24;* G01C *1/00*

U.S. Cl. 356—152 **31 Claims**



1. A method of measuring toe for wheels supporting a vehicle chassis wherein the wheels include at least one pair of non-steerable transversely opposed wheels, utilizing a pair of alignment heads adapted to be mounted on ones of said pair of wheels and providing a signal commensurate with the total toe angle of the wheels on which the heads are mounted, and an angle measuring system incorporated in each head including means defining an angular departure axis extending therefrom, comprising the steps of

mounting an alignment head on each wheel of a non-steerable wheel pair,

directing each of said axes at separate ones of a pair of points equidistant from a point on the centerline of the vehicle chassis,

providing an electrical signal indicative of the angular departure of each departure axis from the plane of the non-steerable wheel on which the respective head is mounted,

combining the angular departure signals with one half the total toe signal and displaying individual toe values for each of the non-steerable wheels, and

providing an electrical command signal for one non-steerable wheel which causes subsequent total toe angle changes to be applied only to the toe display value of said one wheel whereby said one non-steerable wheel may be adjusted for toe and actual individual toe values continuously displayed without further reference to said departure axes.

475-633 O.G.-85-7

4,523,845

DOUBLE GRATING MONOCHROMATOR

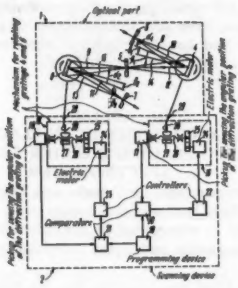
Enn K. Erme; Tiit P. Lepasaar, both of Tartu; Jury E. Ummer, Tallin, and Rein A. Kink, Tartu, all of U.S.S.R., assignors to Institut Fiziki Akademii Nauk Estonskoi SSR, Tartu, U.S.S.R.

Filed Feb. 9, 1983, Ser. No. 464,785

Claims priority, application U.S.S.R., May 14, 1982, 3437401

Int. Cl.³ G01J *3/18*

U.S. Cl. 356—333 **1 Claim**



1. A double grating monochromator comprising an entrance slit, a first diffraction grating, an intermediate slit, a second diffraction grating, and an exit slit all optically coupled and arranged in series along a propagation path of the radiation, and a scanning device for varying the angular positions of said diffraction gratings, as the radiation spectrum is scanned, said scanning device comprising:

a pickup sensing the angular position of said first diffraction grating,

a pickup sensing the angular position of said second diffraction grating,

a programming device having a first output and a second output, for generation of signals specifying the angular positions of said first and second diffraction gratings, as the radiation spectrum is scanned, so that the angles of radiation incident on said diffraction gratings are related by

$$\frac{\sigma_1|(\text{Sin}\,\alpha_1 + \text{Sin}\,\beta_1)|}{|K|} = \frac{\sigma_2|(\text{Sin}\,\alpha_2 + \text{Sin}\,\beta_2)|}{|K| + 1}$$

where

σ_1, α_1, and β_1: constant of one of said diffraction gratings, angle of radiation incident on this grating, and angle of radiation diffracted from this grating, respectively,

σ_2, α_2, and β_2: constant of the other of said diffraction gratings, angle of radiation incident on this grating, and angle of radiation diffracted from this grating, respectively, and

K: spectral order of radiation diffracted from one of said diffraction gratings and extracted by the slit located immediately after this grating, the value of "K" being determined by the working portion of the spectral region of the monochromator,

a first comparator having a first input connected to said first output of said programming device, a second input connected to said pickup sensing the angular position of said first diffraction grating, and an output for generation of a signal corresponding to the difference between signals at its inputs,

a second comparator having a first input connected to said second output of said programming device, a second input connected to said pickup sensing the angular position of said second diffraction grating, and an output for genera-

tion of a signal corresponding to the difference between the signals at its inputs,

a first controller having an input connected to said output of said first comparator, and an output,

a second controller having an input connected to said output of said second comparator, and an output,

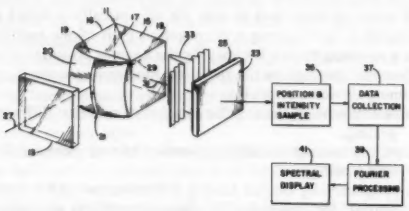
a first electric motor kinematically coupled with said first diffraction grating for positioning it as specified by the signal from said first output of said programming device, and having a control input connected to said output of said first controller, and

a second electric motor kinematically coupled with said second diffraction grating for positioning it as specified by the signal from said second output of said programming device, and having a control input connected to said output of said second controller.

4,523,846
INTEGRATED OPTICS IN AN ELECTRICALLY SCANNED IMAGING FOURIER TRANSFORM SPECTROMETER

James B. Breckinridge, La Canada, and Fred G. O'Callaghan, Mission Viejo, both of Calif., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Sep. 10, 1982, Ser. No. 416,443
Int. Cl.³ G01B 9/02
U.S. Cl. 356—346 **9 Claims**



1. In an imaging Fourier transform spectrometer, an improved interferometer mechanism wherein the optical path difference between the retroreflecting mirrors is obtained electronically, without physical movement of the retro-reflecting mirrors, said interferometer mechanism comprising:

an opaque lens means having a light transmissive slot therein placed in the path of a source of radiation for relaying an image of a pupil;

a beam splitter means placed in the path of the radiation passing through the slot in said lens for creating a first and second wavefront;

an optically reflective cube fixed in position relative to said path of radiation passed through the slot in said lens, said cube having:

a first mirror surface placed in the path of the first wavefront from the beam splitter, at an optical path distance CA at the first mirror surface;

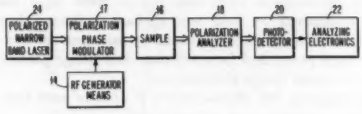
a second mirror surface placed in the path of the second wavefront from the beam splitter at an optical path distance of CB at the second mirror surface, CB having a fixed optical path difference relative to CA, said second mirror surface being at an angle to its wavefront that is different from the angle made by the first mirror surface to its wavefront; and

a two-dimensional pixel detector array means comprised of a plurality of detector elements in a grid placed normal to the path of the interference fringe wavefront from said beam splitter for electronically sensing the fringe field free of any mechanical movement relative to said optical cube, the location of each detector element in one direction being an indicator of optical path difference between said first and second mirror surfaces, the location of each detector element in the other direction corresponding to a pixel of spatial information.

4,523,847
FREQUENCY MODULATION-POLARIZATION SPECTROSCOPY METHOD AND DEVICE FOR DETECTING SPECTRAL FEATURES

Gary C. Bjorklund, Los Altos, and Marc D. Levenson, Saratoga, both of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jul. 7, 1983, Ser. No. 511,593
Int. Cl.³ G01B 9/02
U.S. Cl. 356—349 **11 Claims**



1. A method of detecting a single, narrow polarization anisotropic spectral feature in a sample comprising

providing a beam of light having an optical frequency bandwidth which is narrow compared to the width of the narrow spectral feature and having a center frequency ω_c which lies near the feature,

polarization phase modulating the beam of light with a single RF frequency to provide a pure FM spectrum having a carrier frequency and upper and lower sidebands where the sidebands and carrier are in different states of polarization,

exposing the sample containing the narrow spectral feature to the polarized modulated light so that the FM sidebands probe the narrow spectral feature,

polarization analyzing the light emerging from the sample,

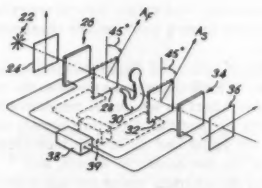
photodetecting the light from the polarizer to detect a beat at a specific RF frequency used for polarization phase modulation, and

electronically monitoring the amplitude of the RF beat signal to indicate the strength of the narrow spectral feature.

4,523,848
POLARISCOPE

Barry Gorman, Preston, and Edwin J. Hearn, Birmingham, both of England, assignors to National Research Development Corporation, London, England

Filed Sep. 24, 1982, Ser. No. 423,309
Claims priority, application United Kingdom, Oct. 1, 1981, 8129655
Int. Cl.³ G01B 11/18
U.S. Cl. 356—368 **6 Claims**



1. A polariscope comprises means to provide an input beam of polarised light;

first liquid crystal means which in a first state allows direct passage of the polarised input beam and in a second state applies a 45° rotation to the polarised input beam;

a first quarter wave plate;

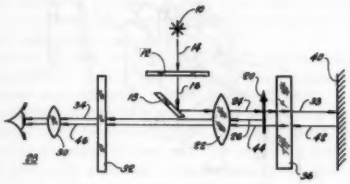
sample location means;
a second quarter wave plate;
second liquid crystal means which in a first state allows passage of light polarised perpendicular to the polarisation axis of the input beam and in a second state applies a 45° rotation to said light;
second polarising means parallel to or crossed with respect to the first polarising means; and
switch means to cause the first and second liquid crystal means each to change between their first and second states.

4,523,849

FRONT LIGHTED OPTICAL TOOLING METHOD AND APPARATUS

William J. Stone, Kansas City, Mo., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Continuation-in-part of Ser. No. 347,758, Feb. 11, 1982, Pat. No. 4,501,473. This application Jun. 30, 1983, Ser. No. 509,554
Int. Cl.³ G01B *11/24*
U.S. Cl. 356—369 **20 Claims**



1. A frontally illuminated optical tooling target, comprising:
(a) fiducial means for reflecting a beam of polarized light from a frontal direction back toward the frontal direction with a first polarization;
(b) a polarizing element positioned at the rear of said fiducial means for effecting a change in the polarization of any of said frontal light bypassing the fiducial means and passing through the polarizing element;
(c) a reflective surface positioned on the rear of said polarizing element for reflecting light passing through said polarizing element back through a second pass of the polarizing element toward the frontal direction with a second polarization, the second polarization differing from the first polarization, whereby upon adjustment of the intensity of one of the first and second polarizations so as to be greater than the other an optical contrast is provided between the light reflected from the fiducial means and the reflective surface.

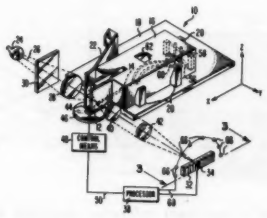
4,523,850

SYSTEM FOR POSITIONING A BODY

Robert L. Covey, Cranbury, N.J., and Michael T. Gale, Wettswill, Switzerland, assignors to RCA Corporation, Princeton, N.J.

Filed Oct. 14, 1982, Ser. No. 434,316
Int. Cl.³ G05D *1/10*
U.S. Cl. 356—375 **17 Claims**

1. A method of positioning a body having two opposed edges and having a first axis oriented to pass through said edges, comprising the steps of:
exposing said body to a beam of light oriented along a second axis substantially orthogonal to said first axis in a direction such that one or both of said edges are imaged by an optical system for projecting a linear section across said body as a silhouette-like image onto all or a portion of a linear array of photodetectors disposed along a direction substantially parallel to said first axis,
scanning said photodetector array to obtain a light intensity transition profile of all or part of said projected image along said photodetector array, said profile having one or two fifty percent (50%) intensity points,
shifting said body along said first axis until both of the fifty percent (50%) intensity points along said transition profile strike predetermined locations along said photodetector array, said profile being indicated by a projected image comprising both of said edges,



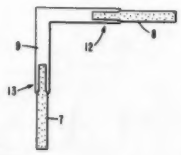
moving said body along said second axis until the slope of said intensity transition profile is maximized, thereby obtaining an in-focus position, and
translating said body along a third axis, substantially orthogonal to said first and said second axes, until the minimum in said intensity transition profile drops to a predetermined percent of the full intensity value.

4,523,851

PRECISION IC ALIGNMENT KEYS AND METHOD

George Maheras, and Hubert O. Hayworth, both of Fort Collins, Colo., assignors to NCR Corporation, Dayton, Ohio

Filed Aug. 11, 1982, Ser. No. 407,204
Int. Cl.³ G01B *11/00*
U.S. Cl. 356—399 **6 Claims**



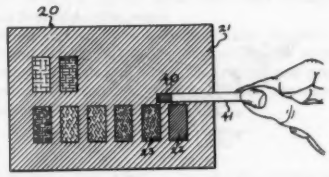
1. An alignment key system, comprising:
a first structural pattern lying in a first plane, characterized by two substantially straight segments that are greater in length than in width and that are substantially orthogonal in relative orientation; and
a second structural pattern lying in a second plane visually parallel to said first plane, characterized by two substantially straight segments that are greater in length than in width, that are substantially orthogonal in relative orientation, that have a relative position one to another to cause a visually perceived partial overlap with said first structural pattern when said first and second structural patterns are aligned, and that in such an aligned state locates the overlapping regions to be furthest from the intersection defined by linear projections of the orthogonal segments of the first structural pattern.

4,523,852

COLOR COMPARISON REFERENCE STANDARD AND METHOD FOR USING SAME

Robert Bauer, Bristol, Ind., assignor to Miles Laboratories, Inc., Elkhart, Ind.

Filed Jun. 9, 1983, Ser. No. 502,462
Int. Cl.³ G01J 3/52
U.S. Cl. 356—421 13 Claims



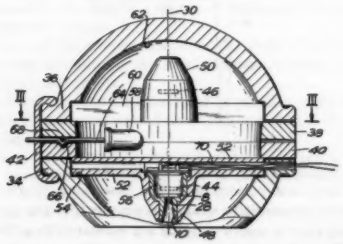
1. A color comparison reference standard comprising a plurality of colored reference areas of differing hues corresponding to discrete reference values and to which a colored response area of a colorimetric test means can be compared to determine the reference value most closely related to the hue of the colored response area, and a background area against which said colored reference areas are displayed, said background area having a luminance (L*) value of from about 15 to about 80, the luminance (L*) value of any portion of said background area being within about 30 of the average luminance (L*) value of any two or more adjacent ones of said colored reference areas which are displayed against said portion of said background area.

4,523,853

MEDICAL TEST REACTION AREA REFLECTED LIGHT PHOTOMETRIC DEVICE

Rudolf V. Rosenbladt, Bad Homburg; Klaus Nenninger, Mannheim, and Rudolf Schüssler, Lampertheim, all of Fed. Rep. of Germany, assignors to Boehringer Mannheim GmbH, Mannheim, Fed. Rep. of Germany

Filed Aug. 31, 1982, Ser. No. 413,292
Claims priority, application Fed. Rep. of Germany, Sep. 30, 1981, 3138878
Int. Cl.³ G01N 21/47; G01J 1/06
U.S. Cl. 356—446 16 Claims



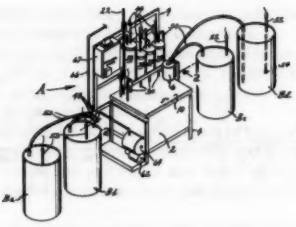
1. In a reflected-light photometric device for determining the reflectivity of a specimen area which is part of an objective area specifically dedicated for the determination of certain properties of body fluids, having a light source for illuminating the specimen area, and a first photodetector for picking up light reflected from the specimen area, the improvement comprising an opaque first diaphragm with a diaphragm surface shaped essentially as a hollow truncated cone and having a light-absorbing inner area facing the axis of symmetry of the path of light between the specimen area and the detector, means mounting the first diaphragm in said path to essentially symmetrically surround the axis of symmetry along part of its length and taper upwardly toward the detector with the cross-section of its upper edge smaller than that of its lower edge and a second diaphragm disposed closer to the specimen area than the first diaphragm with a light absorbing diaphragm surface facing the photodetector, an aperture that surrounds the specimen area and which is essentially symmetrical to the axis of symmetry of the path of light.

4,523,854

APPARATUS FOR MIXING FOUNTAIN SOLUTION

Robert A. Beckley, Mount Vernon, Ill., assignor to World Color Press, Inc., Effingham, Ill.

Filed Nov. 7, 1983, Ser. No. 549,315
Int. Cl.³ B01F 15/02
U.S. Cl. 366—132 13 Claims

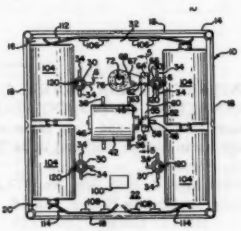


1. An apparatus for preparing a fountain solution for lithographic printing presses by mixing water with liquid additives derived from additive containers, said apparatus comprising: a mixing tank; a water supply line directed into the tank; a remotely operated water valve in the water supply line; a measuring container for each additive; additive supply means for directing additive from each additive container into its measuring container; an additive sensor at each additive container for determining when the additive container has a predetermined quantity of additive in it; additive release means for introducing the additive from each measuring container into the mixing tank; discharge means for withdrawing mixed fountain solution from the mixing tank; and control means to which the remotely operated water valve, the additive supply means, the additive sensors, the additive release means, and the discharge means are responsive, the control means including high and low sensors for detecting when the mixing tank is substantially empty and substantially full, respectively, the control means when the high sensor detects that the mixing tank is full causing the additive supply means to introduce an additive into each measuring container until the additive sensor for that measuring container detects that the container has a predetermined quantity of additive in it, the control means allowing the discharge means to withdraw solution from the tank as the level of the solution in the tank drops from the high sensor to the low sensor and preventing the discharge means from further withdrawing solution from the tank when the level of the solution reaches the low sensor, the control means further holding the water valve open and causing the additive release means to introduce a predetermined quantity of additive simultaneously from each of the measuring containers into the tank after the level of the solution reaches the low level sensor, whereby the water and additives are mixed within the tank to form more fountain solution, the control means further closing the water valve and preventing the additive release means from introducing additive into the tank when the level of solution reaches the high sensor.

4,523,855
SHAKER

Robert L. Walker, 20 White Oaks Cir., St. Charles, Ill. 60174

Filed May 2, 1984, Ser. No. 606,263
Int. Cl.³ B01F 11/00
U.S. Cl. 366—211 6 Claims



1. A shaking device for mixing materials in miniature size container, said device comprising:

a housing having a shell-like shape defining an interior space,

motor means to produce a high-speed rotary output supported in brackets carried by said housing and extending into said interior space,

a circular bearing member having an eccentrically offset aperture for a drive shaft of said motor means disposed therein and a laterally radiused outer surface,

a connecting rod having an expandable opening formed in ends thereof respectively, said eccentric bearing member readily disposed in one said opening with said opening formed with a surface complementary to said member radiused surface to secure said member in said opening and allow operative interaction between said member and said connecting rod,

an operating member having an arm with a radiused end disposed in said opening in an opposite end of said connecting rod with said opposite end opening formed with a surface complementary to said arm radiused end to secure said arm end in said opening and allow operative interaction between said arm end and said connecting rod and an upright shaft disposed in a vertical passageway in said housing and extending outwardly therefrom, and

a cradle attached to said operating member upright shaft with said cradle having spaced frame members to receive said miniature size container oriented horizontally with said container held therebetween by strap means attachable to said cradle,

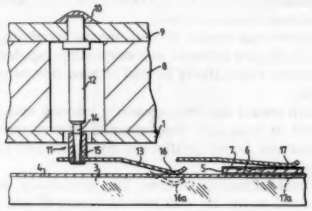
wherein energizing said motor means rotates said eccentric bearing member to reciprocate said connecting rod and in turn oscillate said operating member and attached cradle, said oscillation mixing said materials in said container carried by said cradle to homogenize said materials.

4,523,856
ELECTRONIC TIMEPIECE INCLUDING AN ELECTRO-ACOUSTIC TRANSDUCER

Claude-André Gygax, Evilard, Switzerland, assignor to Societe Suisse pour l'Industrie Horlogere Management Services, Bienne, Switzerland

Filed May 29, 1981, Ser. No. 269,932
Claims priority, application France, Jun. 4, 1980, 80 12715
Int. Cl.³ G04B 23/02
U.S. Cl. 368—72 3 Claims

1. An electronic timepiece comprising at least an analog display means in which the hands are located between a dial and a crystal, a metallized decoration seen from outside the crystal mounted on the inner surface thereof for partially extending thereover, an electro-acoustic transducer supported by the metallized decoration and having at least a first electrode attached to said metallized decoration to assure an electrical connection with said first electrode of said transducer, a printed circuit located within the timepiece movement providing electronic control means and having output terminals for providing an electric signal at an acoustic frequency, two conductive leads arranged so that the first thereof contacts said metallized decoration and the second thereof contacts a second electrode of said transducer wherein each of said conductive leads comprises a stud arranged to traverse the dial in a region lying under the decoration, a first end of each of said studs

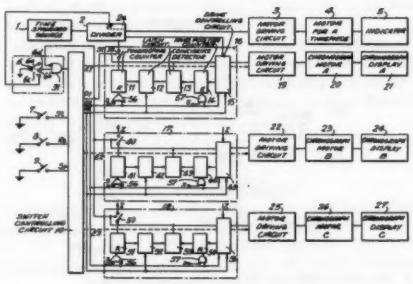


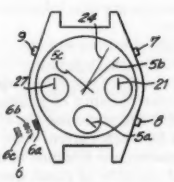
being fixed to a respective output terminal and the second end adapted to receive, following assembly of the dial onto the timepiece, a spring blade, at least two of said spring blades for effecting an electrical contact in the case of said first stud with said decoration and in the case of said second stud with said second electrode following introduction of the timepiece movement into the case bearing the crystal.

4,523,857
MULTI-FUNCTION ANALOG ELECTRONIC TIMEPIECE

Kenichi Ushikoshi, Suwa, Japan, assignor to Kabushiki Kaisha Suwa Seikosha, Tokyo, Japan

Filed Aug. 30, 1983, Ser. No. 527,893
Claims priority, application Japan, Aug. 31, 1982, 57-151072
Int. Cl.³ G04F 5/00
U.S. Cl. 368—157 17 Claims





1. An analog electronic timepiece having multiple functions comprising: a standard frequency signal generator, a divider network receiving the standard signal output of said generator

and outputting signals of lower frequency, one said lower frequency signal being a timekeeping signal, an analog display for timekeeping having a timekeeping indicator hand connected to a timekeeping motor, timekeeping motor driving means for receiving said timekeeping signal and outputting timekeeping driving signals to said timekeeping motor, a power source for electrically powering all electrical components of said timepiece;

at least one supplemental motor, each said at least one supplemental motor being connected respectively to a supplemental indicator hand;

supplemental motor driving means receiving signals from said divider network and outputting supplemental driving signals respectively to said at least one supplemental motor;

switch means for independently starting and stopping each said at least one supplemental motor, said timekeeping function being unaffected by operation of said switch means;

external actuating means for selectively actuating said switch means by selective operation of said external actuating means;

phase control means for receiving said frequency outputs of said divider and for shifting the phases therebetween, said phase-shifted signals being input to said timekeeping and supplemental motor driving means, respectively, said timekeeping motor never being driven concurrently with any of said at least one supplemental motor, peak current drain from said power source being less than for concurrent motor driving.

4,523,858

COMBINED ELECTRONIC CALCULATOR AND ELECTRONIC ALARM TIMEPIECE

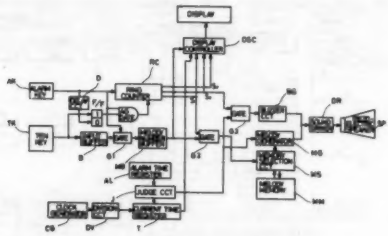
Toshio Nishimura, Joyo, and Akitaka Morita, Shiki, both of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Mar. 4, 1982, Ser. No. 354,757

Claims priority, application Japan, Mar. 6, 1981, 56-32700; Mar. 6, 1981, 56-32701

Int. Cl.³ G04G *13/00*

U.S. Cl. 368—272 **7 Claims**



1. An electronic alarm timepiece comprising:

clock means for developing current time information;

alarm generation means for generating a plurality of alarm tones;

means for introducing time information indicative of desired alarm times;

a bistable alarm selection switch;

alarm selection means, responsive to actuation of said bistable alarm selection switch, for selecting a particular alarm tone from the plurality of alarm tones and for enabling generation of the particular alarm tone in response to the agreement between current time information and alarm time information, the selection of the particular alarm tone within said plurality of alarm tones and the selective enabling of the generation of the particular alarm tone being carried out solely by actuation of said bistable alarm selection switch;

said alarm selection means including ring counter means for cyclically selecting a particular alarm tone from said plurality of alarm tones.

4,523,859

SEALED UNITARY THERMOMETRIC CALIBRATION CELL CONNECTING DIFFERENT FIXED POINTS

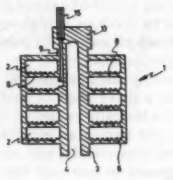
Georges Bonnier, Montsoult, and Yves Hermier, Paris, both of France, assignors to Centre National de la Recherche Scientifique, Paris, France

Filed Mar. 8, 1983, Ser. No. 473,247

Claims priority, application France, Mar. 9, 1982, 82 03951

Int. Cl.³ G01K *15/00, 1/16*

U.S. Cl. 374—1 **7 Claims**



1. A sealed thermometric cell for calibrating thermometers comprising:

means for defining a unitary assembly of at least two hermetically sealed chambers, each containing a substance having a characteristic phase transition temperature different from that of the substance contained in the other chamber;

said chambers being separated by a partition wall having high heat conductivity, and

said means including an integral massive metal part forming at least a portion of said partition wall of each of said chambers to further insure high heat transfer between said chambers, said part defining a housing for the reception of a thermometer to be calibrated.

4,523,860

GAS SATURATION MONITORING SYSTEM AND METHOD

Thomas G. Chin, El Cerrito; Rudy F. Klaver, Albany, and Arthur Alston, El Cerrito, all of Calif., assignors to Chevron Research Company, San Francisco, Calif.

Filed Dec. 14, 1982, Ser. No. 449,679

Int. Cl.³ B01F *3/04;* G01N *25/12*

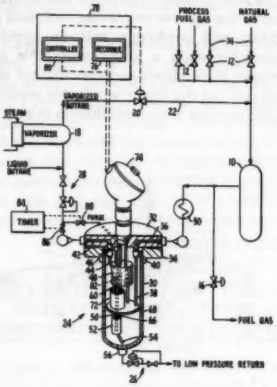
U.S. Cl. 374—27 **11 Claims**

1. A method for monitoring the amount of a condensable fuel that can be added into a fuel gas before condensation is likely to occur, comprising the steps of:

measuring a first temperature indicative of the fuel gas temperature;

measuring a second temperature wherein the second temperature is the adiabatic saturation temperature of the condensable fuel and related to the rate at which the condensable fuel evaporates into the fuel gas;

determining a difference between the first measured temperature and the second measured temperature; and



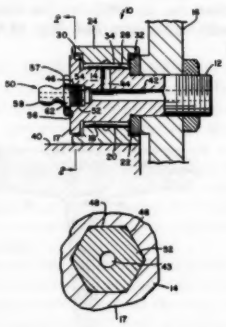
recording the determined difference for selectively determining if the fuel gas is maintained at a safe level.

4,523,861

BEARING WITH A LUBRICATION FITTING

Leo Stella, Bristol, Conn., assignor to The Torrington Company, Torrington, Conn.

Filed Jun. 18, 1984, Ser. No. 621,783
Int. Cl.³ F16C *33/66*
U.S. Cl. 384—475 **5 Claims**



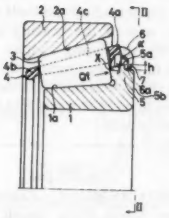
1. A bearing comprising: an inner member; an outer member of greater inside diameter than the outside diameter of the inner member thus providing an annular space between the inner member and the outer member; a plurality of rolling members in the annular space, said inner member having a longitudinal lubrication passage, at least a portion of said longitudinal lubrication passage being non-circular, and a cross-hole extending radially from the longitudinal lubrication passage to the annular space; and a lubrication fitting having a cylindrical shank press fit into said non-circular lubrication passage portion.

4,523,862

TAPERED ROLLER BEARING

Hiroyoshi Yasui; Teruo Yoshida, both of Nara; Hiroshi Ueno, Osaka, and Katsunori Tsumura, Nara, all of Japan, assignors to Koyo Seiko Company Limited, Osaka, Japan

Filed Jan. 30, 1984, Ser. No. 574,962
Claims priority, application Japan, Jun. 28, 1983, 58-100350[U]
Int. Cl.³ F16C *33/46, 33/58*
U.S. Cl. 384—564 **14 Claims**



1. In a tapered roller bearing including an inner race and an outer race respectively having a first tapered track and a second tapered track, a plurality of tapered rollers disposed between said inner race and said outer race, and held in circumferentially equally spaced positions by a cage made of a synthetic resin, a shoulder for guiding the tapered rollers, provided only at a large diameter portion of said inner race, and projections for engagement with said shoulder, formed on a large diameter side annular portion of said cage at portions thereof corresponding to its positions between windows for the tapered rollers, the improvement comprising;

said cage having the projections each formed on the large diameter side annular portion thereof in such a shape as is folded radially and inwardly at its forward end portion, with a width and a thickness of said projection being gradually reduced from its base towards said forward end portion to provide a pointed shape,

said inner race having the shoulder formed into an inclined surface, with its diameter being increased from an inner side of the bearing towards its outer side, and

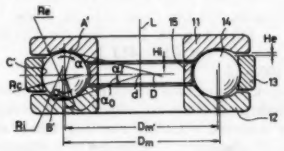
an engaging portion formed in said shoulder for engagement with said projections, whereby the forward ends of said projections are engaged with said engaging portion so as to maintain non-contact with respect to said shoulder during rotation of the bearing.

4,523,863

THRUST BALL BEARING

Hideo Okoshi, Fujisawa, Japan, assignor to Nippon Seiko Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 14, 1983, Ser. No. 541,969
Claims priority, application Japan, Oct. 25, 1982, 57-185958
Int. Cl.³ F16C *19/10, 33/58*
U.S. Cl. 384—609 **8 Claims**



1. A thrust ball bearing comprising a row of balls, first and second axially opposed races each having a track groove whose cross-sectional radius is greater than the radius of each

ball and which has a single spot of contact with each ball to allow rolling contact, a retainer disposed axially between the first and second races and diametrically inside of the balls to retain said balls between said first and second races, and a third race disposed axially between the first and second races and having a track groove circumscribing each ball with a single spot of contact, the inner diameter of the track groove of the third race being slightly smaller than the diameter of a circle circumscribing the balls when the balls are settled in the bearing so that the apex of a cone formed by the tangents of the balls at their points of contact wth the first and the second races lies slightly beyond the center axis of the bearing, the third race being supported by the balls to rotate with the balls about the center axis of the bearing so that spin contact is allowed but there is no sliding contact between each ball and the track groove of the third race in the circumferential direction thereof, the third race being formed with a circumferentially extended oil groove at a position including the center of spin motion of each ball.

4,523,864

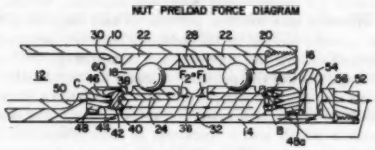
TANDEM BEARING CONSTRUCTION

Jerry D. Walter, North Palm Beach, Fla., and Claude R. Stogner, Huntsville, Ala., assignors to United Technologies Corporation, Hartford, Conn.

Filed Apr. 27, 1984, Ser. No. 604,755

Int. Cl.³ F16C *19/10, 33/58*

U.S. Cl. 384—613 **4 Claims**



1. Means for equalizing the load on tandemly mounted ball bearings supporting a shaft in a housing, each of the ball bearings including an inner race, an outer race and a plurality of balls mounted therebetween, means for locking said tandemly mounted bearings in axially spaced relationship to said shaft, said equalizing means including a concentrically mounted carrier disposed between said housing and said outer races, a pair of load equalizers mounted at the ends of said carrier and said outer races each having a pair of legs engaging the ends of the carrier and the ends of the outer races, a pair of pivoted members engaging the load equalizers at the opposite end of said legs and equal distance therefrom said legs being pivoted in response to thrust loads imposed on said bearing to transmit the loads in a predetermined proportion to said carrier and said outer races, the carrier being in sliding relation with said housing so that the thrust load is equalized in both the forward and reverse directions.

4,523,865

MARKING AND ENGRAVING MACHINE

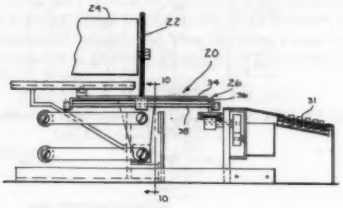
Roy A. Schacht, 744 Des Peres Rd., St. Louis, Mo. 63131

Filed Aug. 24, 1983, Ser. No. 525,960

Int. Cl.³ B41J *3/38, 1/54*

U.S. Cl. 400—18 **20 Claims**

1. A marking machine provided with a rotatable horizontally extending shaft having means for receiving selectively a vertically disposed rotatable marking wheel or separate engraving tool adapted to be engaged in marking contact with a workpiece supportable upon an underlying worktable, said marking wheel being provided with marking characters such as letters, numerals and the like and an engraving tool for engraving characters, designs and the like on the periphery of the wheel, said marking wheel or separate engraving tool and worktable being adapted to be engaged together to bring the marking wheel or separate engraving tool and workpiece together in marking engagement and means for driving said worktable in an X-Y relation to provide said engraving by the marking wheel or the separae engraving tool, said means comprising providing said worktable with an upper worktable member supportable upon a lower worktable member for slidable movement to the front and rear thereof in a Y direction, means for driving the lower worktable member with the upper worktable member supported therein in a transversing X



direction to the left and right of the machine, means for driving the upper worktable member in said Y direction reciprocably toward the front and rear of the machine, said means for driving the upper worktable and said means for driving the lower worktable being independent of each other and being simultaneously operable at different rates of speed, said marking wheel or separate engraving tool being rotatable to a selected marking or engraving position in registry with said workpiece and means for raising the worktable and supported workpiece into marking or engraving engagement with said marking wheel or separate engraving tool.

4,523,866

WIRE PRINT HEAD HAVING PIEZOELECTRIC DRIVE ELEMENTS

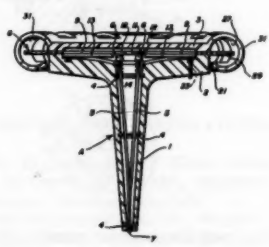
Peter Hirzinger, Wendelstein, and Karl-Heinz Vatterott, Dudenstadt, both of Fed. Rep. of Germany, assignors to Triumph-Adler A.G. fur Buro- und Informationstechnik, Nuremberg, Fed. Rep. of Germany

Filed Jul. 22, 1983, Ser. No. 516,463

Claims priority, application Fed. Rep. of Germany, Jul. 24, 1982, 3227801

Int. Cl.³ B41J *3/12*

U.S. Cl. 400—124 **7 Claims**



1. A wire print head comprising

a generally cone shaped tubular wire guide structure having a circular flange at its large end,

print wires supported by said wire guide structure having a drive end and a print end, said print wires being supported within said wire guide structure with the drive ends in a circle array and with said print ends in a line array,

a circular cover member secured to said flange and defining a cavity therebetween,

a ring clamped between said cover member and said circular flange having radial tabs extending into said cavity toward the center of said ring with the free ends of said tabs in driving contact with the drive ends of associated print wires,

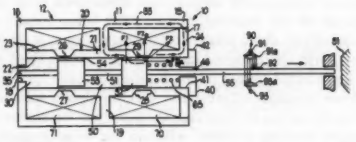
and piezoelectric drive elements bonded to each of said tabs operable when driven by print signals to flex said tabs thereby to drive associated print wires, said circular flange having a curved surface on the side defining said cavity, said curved surface having radial grooves opposite said radial tabs of a width less than the width of said radial tabs and more than the width of said piezoelectric drive elements, said curved surface serving to guide movement of flexed tabs and said grooves allowing non contacting movement of driven piezoelectric drive elements.

4,523,867

BI-DIRECTIONAL DRIVE PRINT WIRE ACTUATOR WITH FORWARD-VELOCITY AND REVERSE-POSITION CLOSED LOOP FEEDBACK CONTROL

Harry R. Berrey, Waynesboro, and Paul W. Caulier, Greenwood, both of Va., assignors to Genicom Corporation, Waynesboro, Va.

Filed Jul. 25, 1983, Ser. No. 516,897
Int. Cl.³ B41J *3/12, 9/42*
U.S. Cl. 400—124 **26 Claims**



1. An impact print wire actuator for imprinting upon a target surface comprising:

print wire means movable in forward and reverse directions between an at-rest position spaced from the target surface and an impact position against the target surface,

a source of first and second reference signals,

drive means coupled to said print wire means for effecting movement thereof in said forward and reverse directions, and

control means coupled to said drive means and to said print wire means for continuously varying the forward and reverse driving forces applied to said print wire means as said print wire means moves between the at-rest and impact positions thereof as different first and second functions of the instantaneous position of said print wire means and of said first and second reference signals respectively during said forward and reverse movements.

7. An impact print wire actuator for imprinting upon a target surface comprising:

print wire means movable in forward and reverse directions between an at-rest position spaced from the target surface and an impact position against the target surface,

drive means coupled to said print wire means for powering the movement of said print wire means,

position sensing means in communication with said print wire means for continuously generating a position signal corresponding to the instantaneous displacement of said print wire means for monitoring the instantaneous displacement of the print wire means, and

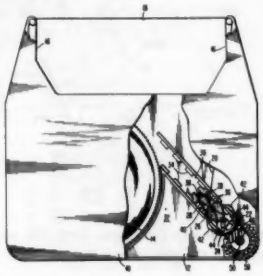
control means coupled between said position sensing means and responsive to said position signal for controlling the operation of said drive means by effecting a closed loop velocity feedback control circuit during said forward movement and a closed loop position control circuit during said reverse movement.

4,523,868

RIBBON FEED CARTRIDGE

David T. Shadwick, Versailles, Ky., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Jul. 18, 1983, Ser. No. 514,407
Int. Cl.³ B41J *35/28*
U.S. Cl. 400—208 **5 Claims**



1. A ribbon cartridge for a printer comprising a chamber, a supply of ribbon contained within said chamber, a spool for taking up said ribbon after use, an opening for exit and entrance of said ribbon from and into said chamber to provide a span of said ribbon exterior to said chamber,

a drive, drivingly engaging said spool on the periphery thereof to drive said ribbon onto said spool,

a carrier for shiftably supporting said spool relative to said drive to move the axis of said spool away from said drive as used ribbon is collected on said spool,

said carrier comprised of a support plane of material perpendicular to said axis of said spool, and supported and guided by the interior of said cartridge,

said chamber, on one surface perpendicular to said axis of said spool, comprises a channel means for restraining, supporting and guiding said carrier for movement within said channel means with said carrier positioned with said support plane substantially parallel with said one surface and constraining said carrier for movement only away from said drive,

spring means directly interconnecting said chamber and said carrier for yieldingly biasing said carrier toward said drive.

4,523,869

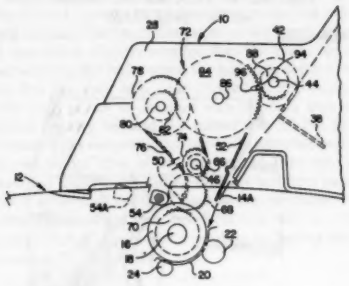
SHEET FEEDER

Samuel W. Martin, Weston, Conn., assignor to LQ Corporation, Meriden, Conn.

Filed Aug. 29, 1983, Ser. No. 527,014
Int. Cl.³ B41J *13/10*
U.S. Cl. 400—629 **13 Claims**

1. For use in controlling sequential feeding of individual paper sheets along a paper feed path from a paper storage hopper to a computer controlled printer wherein each individual paper sheet is accurately moved by a power operated platen into a printing position for the start of printing thereon in synchronism with a start-to-print cycling control of the word processor printer, a mechanical timing mechanism comprising sheet engaging feed means upstream of the word processor printer, and drive means drivingly connected between the platen and the feed means for operating the feed means, the drive means being continuously operable in uninterrupted repetitive operating cycles responsive to uninterrupted unidirectional operation of the platen, the drive means including mechanical timing means for intermittently actuating the feed

means responsive to said uninterrupted operation of the printer drive for sequentially driving individual paper sheets a prese-



lected distance in one direction along the paper feed path in timed relation to the printer operation.

4,523,870

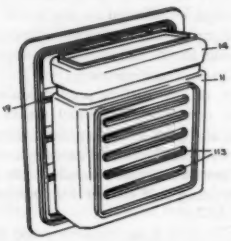
AROMA-DISPENSING CARTRIDGE AND HOLDER ASSEMBLY FOR AUTOMOBILES

Donald Spector, 380 Mountain Rd., Union City, N.J. 07087

Filed Jul. 26, 1982, Ser. No. 402,031

Int. Cl.³ A61L *9/04*

U.S. Cl. 98—2.11 **5 Claims**



1. An aroma-dispensing system comprising a cartridge and holder assembly which when activated functions to diffuse an aromatic vapor into a forced air stream intercepted by the assembly, said assembly operating in combination with means in which said stream is emitted through a vent grill formed by at least one slat, said assembly comprising:

A. an open-top holder having a rectangular cross section, the front and rear walls thereof having corresponding arrays of parallel slots, said holder being provided at its rear wall with releasable clip means provided with a pair of cooperating flexible elements engaging the slat of the grill to secure the assembly thereto, whereby the forced air therefrom is intercepted by the assembly;

B. a cartridge telescopically receivable in the holder and having front and rear walls provided with similar arrays of parallel slots, said cartridge housing a pad of porous material permeable to said forced air stream and impregnated with a liquid scent; and

C. control means to render said cartridge axially shiftable relative to the holder from an active position in which the holder and cartridge slots lie in registration, thereby permitting the forced air stream to pass through the pad to volatilize the liquid to produce said aromatic vapor, to an inactive position in which the slots are out of registration to effectively seal the cartridge.

4,523,871

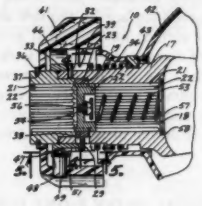
AUTOMATIC LOCK OPEN U-JOINT COUPLER

Florian B. Recker, 802 First St. SW., Dyersville, Iowa 52040

Filed Sep. 1, 1977, Ser. No. 829,910

Int. Cl.³ F16B *7/00*

U.S. Cl. 403—12 **5 Claims**



1. In a coupling for releasably connecting a power shaft to a drive shaft having external splines and an annular recess around the shaft between the opposite ends of the splines, the coupling including a housing connected to the power shaft and having an open end with a bore having internal splines meshable with the external splines on the drive shaft, an annular locking sleeve having internal splines alignable with the internal splines of the housing and rotatably mounted in the housing for shifting between open and locking positions wherein the splines are respectively aligned and misaligned with the internal splines of the housing, the housing being axially slidable onto the drive shaft when the locking sleeve is in its open position with the external splines on the drive shaft meshing with the internal splines in the housing and the locking sleeve to a drive position wherein the locking sleeve splines are located in the recess of the drive shaft so that the sleeve is rotatable to its locking position wherein the misalignment of the splines of the locking sleeve with the splines of the drive shaft prevent separation of the housing and the drive shaft, and further including a follower member having external splines meshing with the internal splines of the housing and axially slidable therein between a first position wherein it engages only the housing spline and a second position wherein it engages both the housing spline and the locking sleeve splines to hold said splines in alignment and spring means for biasing the following member toward its second position, characterized in that the spring means comprises a compression spring means mounted in the housing bore and having one end connected to the housing and the other end attached directly to the follower member.

4,523,872

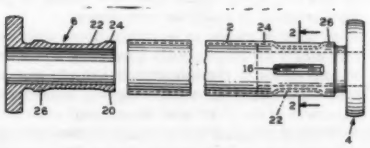
TORSION RESISTANT GROOVED JOINT

Aldo Arena, Smithtown, and Robert L. Benoit, Oakdale, both of N.Y., assignors to Grumman Aerospace Corporation, Bethpage, N.Y.

Filed Aug. 12, 1981, Ser. No. 292,252

Int. Cl.³ F16B *4/00*

U.S. Cl. 403—274 **6 Claims**



1. A torque tube assembly wherein the torsional strength of the end connection exceeds the torsional strength of the tube comprising a pair of end members interconnected by a tubular member, each of said end members having a male extension

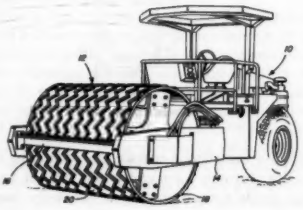
extending into said tubular member, said male members each having a plurality of axial grooves spaced equidistant circumferentially around said male member with shoulders at the opposite axial ends of said grooves, the inner wall of said tubular member resting on said shoulders, end portions of said tubular member intermediate said shoulders being recessed into said grooves and forming a torque transmitting inteconnection therebetween, each of said axial grooves being comprised of a plurality of straight side walls and a bottom member intersecting said side walls, each of said side walls being equally angularly sloped with respect to a vertically disposed plane normal to a horizontally disposed plane passing through intersections of said side walls and an outer surface of said end members, said intersections of said side walls with said outer surface and said bottom member each having a radius, the axial length of said grooves between said shoulders being greater than the circumferential width of said grooves, the number of grooves in the end member divided by the outer diameter of the end member being equal to or less than 2.1 divided by the groove width, the depth of each groove, as measured substantially vertically at the groove edge, divided by the groove width, measured at the bottom of the groove, being equal to or less than 2, and the angular slope of each of the groove side walls being not substantially less than 5° and not substantially more than 60° with said side walls sloping away from said bottom member of the recess, whereby the angle of slope of said groove side walls is selected in accordance with the wall thickness of said tubular member.

4,523,873

VIBRATORY ROLLER WITH AXIALLY SPACED ZIG ZAG IMPACT BARS AND WIRE ROPE CLEANERS

Robert B. Elliot, P.O. Box A-26,, Ward Cove, Ak. 99928

Filed Aug. 16, 1983, Ser. No. 524,154
Int. Cl.³ E01C *19/26*
U.S. Cl. 404—124 **5 Claims**



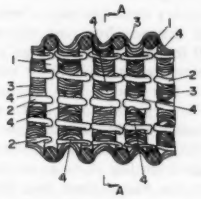
1. In combination with a vibratory roller journalled from a frame portion of a vehicle of the compaction-type, said roller including a generally cylindrical outer face, a plurality of circumferentially extending lug bands carried by the outer face of said roller, said lug bands being disposed in laterally spaced zones of said outer face spaced longitudinally of said roller and in which diametric planes of said roller lie, said lug bands being comprised of lugs including outer surfaces disposed at least substantially normal to intersecting radii of said roller and generated about the axis of rotation of said roller, said outer surfaces being at least substantially circumferentially continuous about said roller and extending in zig-zag paths contained in said zones, the lateral spacing between said zones defining circumferentially continuous paths of said outer face free of said lug bands, scraper members carried by said frame portion and disposed in at least closely spaced relation relative to said face, said scraper members being operative to scrape accumulated debris from said paths as said roller is rotated relative to said frame portion, said lugs including opposite side surfaces divergent from said outer surfaces toward said outer face, said lugs being generally hexagonal in transverse cross section and welded to said outer face with the welding operation being performed to create fillets on opposite sides of said lugs forming inward continuations of said inclined side surfaces.

4,523,874

PLASTIC UNDERDRAINAGE TUBE

Shinji Miki; Toyokazu Nishio; Shinzo Matsuyama, and Shinichi Yamazaki, all of Azuchimachi, Japan, assignors to Takiron Co., Ltd., Osaka, Japan

Filed Sep. 23, 1982, Ser. No. 422,088
Int. Cl.³ E02B *11/00*
U.S. Cl. 405—43 **3 Claims**



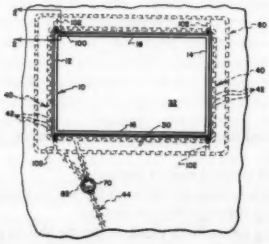
1. A plastic underdrainage tube having a longitudinal axis comprising as an integrally extruded unit a plurality of axially spaced apart annulate bands having relatively greater thicknesses arrayed so that said axis passes through a center of each band, a plurality of longitudinally parallel bars each joining integrally at its intersections to said annulate bands to form a reticular tube body, and a plurality of circumferentially disposed longitudinal strands in thicknesses less than those of said annulate bands and those of said bars, said strands joining integrally substantial portions of outer peripheries of said annulate bands and bars respectively and being positioned radially outwardly of said bars at any cross section perpendicular to said longitudinal axis and being closely spaced apart along the circumference of said tube body to define drainage openings therebetween in the mesh portions defined by the annulate bands and longitudinal bars, and said openings being dispersed over the entire surface of the tube.

4,523,875

AUXILIARY DRAINAGE SYSTEM FOR ELIMINATING WATER PROBLEMS ASSOCIATED WITH A FOUNDATION OF A BUILDING

Dante DiFiore, 5387 Wilson Mills Rd., Highland Heights, Ohio 44143

Filed Dec. 27, 1982, Ser. No. 453,129
Int. Cl.³ E02B *11/00;* **E02D** *19/00;* **E04D** *13/08*
U.S. Cl. 405—50 **10 Claims**



1. A method of relieving and eliminating ground water buildup near at least a portion of a foundation wall of a building, wherein the building has a basement floor that is internal with respect to the foundation wall, and wherein the basement

floor has a top surface, and wherein the building has a footer drain line system extending along the foundation wall portion, including the steps of:

(a) digging a trench at a location that is external with respect to and extending along but spaced a substantial distance on the order of several feet laterally outwardly from an underground wall which forms a portion of a foundation wall of a building, the trench extending to a depth below the height of a top surface of a basement floor of the building;

(b) installing an elongate auxiliary drain line means in the trench at a level below that of the height of the top surface of the basement floor of the building and at a level below that of nearby portions of the footer drain line system, with the auxiliary drain line means being similarly spaced a substantial distance from and external to the underground wall for providing openings at spaced locations along the elongate auxiliary drain line means to admit water from a surrounding area that is external with respect to the undergrond wall into the auxiliary drain line means, including establishing at least one branch line connection between the auxiliary drain line means and the nearby footer drain line portions so that water may discharge from the footer drain line system through the branch line connection into the auxiliary drain line means;

(c) providing means for connecting the auxiliary drain line means to a storm drain line which serves the building so that water which is admitted to the auxiliary drain line means is channeled into the storm drain line; and,

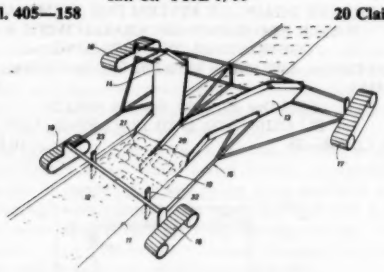
(d) filling substantially all but the topmost few inches of the trench with particulate material to provide porous reservoir means surrounding the auxiliary drain line means at a location which is external with respect to the underground wall and extending upwardly from the auxiliary drain line means for receiving ground water and ducting it to the auxiliary ground drain line means to prevent the buildup of ground water in the vicinity of the foundation wall portion.

4,523,876

ICE SLOT MAINTENANCE

Dean P. Hemphill, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed Dec. 2, 1983, Ser. No. 557,493
Int. Cl.³ F16L 1/00
U.S. Cl. 405—158 **20 Claims**



1. A method for laying a pipeline beneath ice covering water comprising:

cutting an elongated slot in the ice;

removing newly formed ice from the ice slot until the pipeline can be laid through the ice slot by

positioning an inclined plane in the ice slot to a depth no less than the interface of the newly formed ice and underlying water, the inclined plane being at least partly supported by means located adjacent to the ice slot;

moving the inclined plane laterally along the length of the ice slot;

sliding the newly formed ice up the inclined plane and out of the water; and

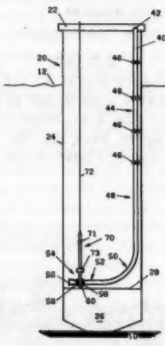
laying the pipeline through the ice slot.

4,523,877

J-TUBE METHOD AND APPARATUS

Lyle D. Finn, Houston; Bruce C. Volkert, Katy; Jamie F. Matthews, Jr., Houston, all of Tex., and Michael M. Brady, Cobham, England, assignors to Exxon Production Research Co., Houston, Tex.

PCT No. PCT/US80/01066, § 371 Date Mar. 5, 1982, § 102(e) Date Mar. 5, 1982, PCT Pub. No. WO82/00697, PCT Pub. Date Mar. 4, 1982
PCT Filed Aug. 21, 1980, Ser. No. 391,600
Int. Cl.³ F16L 1/04
U.S. Cl. 405—195 **5 Claims**



1. A method for installing a service line extending upwardly from the seaflor through a curved guide tube at an offshore structure, the guide tube including a generally longitudinal upper segment, a substantial, generally longitudinal lower segment, a generally lateral segment, and a lower end, said method comprising:

connecting said upper segment to the structure so that it cannot move substantially laterally with respect to the structure, but can be moved longitudinally with respect to the structure, leaving said lower segment and said lateral segment free of the structure;

restraining said lower end so that it cannot move substantially laterally with respect to the structure, but can be moved longitudinally with respect to the structure;

moving the tube with respect to the structure to an elevation at which said lateral segment is above the highest expected mudline on the structure after settling;

placing the structure on the seafloor;

permitting the structure to settle to its substantially final elevation;

lowering the tube with respect to the structure until said lower end is a short distance above the seafloor;

drawing said service line through the tube; and

releasing said lower end, thereby permitting the force of gravity to flex said guide tube so that said lower end descends toward the seafloor.

4,523,878

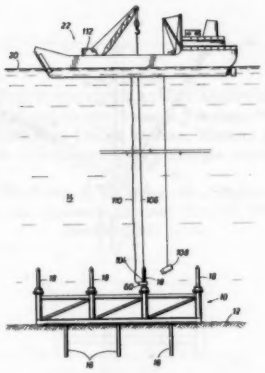
REMOTELY REPLACEABLE GUIDEPOST METHOD AND APPARATUS

Jene A. Richart, Houston, Tex.; Bradley D. Beitler, Ojai, Calif., and David G. Deeken, Weybridge, England, assignors to Exxon Production Research Co., Houston, Tex.

Continuation of Ser. No. 296,762, Aug. 27, 1981, abandoned. This application Apr. 13, 1984, Ser. No. 599,884

Int. Cl.[3] **E02D** *29/00;* **E21B** *7/128, 43/013;* **E16L** *1/04*

U.S. Cl. 405—195 **12 Claims**



1. A remotely replaceable guidepost system for use in remote alignment of equipment being lowered from the surface of a body of water to a subsea structure located on the floor of said body of water, said remotely replaceable guidepost system comprising:

a receptacle formed integrally with or permanently rigidly attached to said subsea structure, said receptacle having an upper load-bearing surface;

a guidepost having a vertical axis, unobstructed upper section and a lower section, said lower section of said guidepost being remotely insertable into said receptacle;

a support shoulder formed integrally with or rigidly attached to said guidepost, said support shoulder being located between said upper section and said lower section of said guidepost such that said support shoulder contacts said upper load-bearing surface of said receptacle when said guidepost has been fully mated with said receptacle so that downward vertical loads on said guidepost are transmitted by said support shoulder to said receptacle; and

means for releasibly locking said lower section of said guidepost into said receptacle, said locking means being releasible only by application of an upward vertical force to said guidepost.

4,523,879

ICE BARRIER CONSTRUCTION

Raymond G. Finucane, and Hans O. Jahns, both of Houston, Tex., assignors to Exxon Production Research Co., Houston, Tex.

Filed Apr. 16, 1982, Ser. No. 369,042

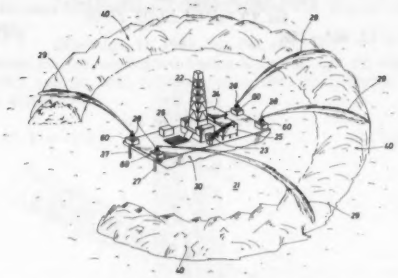
Int. Cl.[3] **E02D** *21/00;* **E02B** *17/00*

U.S. Cl. 405—217 **28 Claims**

1. A method for protecting an offshore structure located in a body of water which is at or near its freezing temperature, comprising the steps of:

(a) withdrawing water from said body of water when the temperature of the ambient air is below the freezing temperature of said water;

(b) spraying said water upwardly and outwardly in a stream through said ambient air to cause said water to freeze as it passes through said ambient air, said stream being directed so that the resulting spray ice is deposited at a location which is laterally offset from said offshore structure and from the position from which said water is sprayed, wherein said spraying causes a high enough percentage of said water to freeze as it passes through said ambient air so



that the resulting spray ice accumulates into a mass of spray ice at said location; and

(c) continuing steps (a) and (b) until said mass of spray ice forms a grounded spray ice barrier having a size and shape adapted to protect said offshore structure.

4,523,880

TIE ROD ASSEMBLY FOR ROCK BOREHOLE ANCHOR

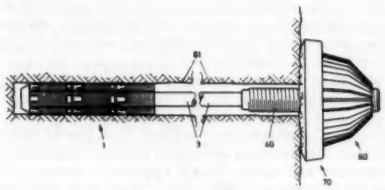
Erwin Isler, Rapperswil, Switzerland, assignor to H. Weidmann, AG, Rapperswil, Switzerland

Filed May 4, 1983, Ser. No. 491,489

Claims priority, application Switzerland, May 14, 1982, 3023/82; Dec. 29, 1982, 7614/82

Int. Cl.[3] **E21D** *21/00;* **F16B** *2/14, 43/00*

U.S. Cl. 405—259 **14 Claims**



1. A tie rod for a rock securing system having a tension element anchored in a borehole by a molded anchoring element which rests against the wall of the borehole and holds the tension element, the tension element being connected with the anchoring element in a pressure-locked mannner in the rock by frictional force, and the free end of the tension element being threaded to a tension nut supported by an anchor plate resting against the surface of the rock, characterized by: the anchoring element (**1**) comprising a plurality of axially spaced spreading bolts (**10**) each solidly connected with the tension element (**3**) and each having a plurality of wedge surfaces (**15**) surrounding the tension element, and a plurality of spreading sleeves (**29**) individually associated with and surrounding the bolts and connected with each other, a threaded sleeve (**40**) coupled to a free end (**42**) of the tension element, the outer surface of the tension element and the inner surface of the threaded sleeve each having a plurality of mating elevations (**95, 96, 97**), said elevations having a saw-tooth sectional configuration with equal height flanks (**45**) of increasing length from the free end, and the tension nut (**60**) and anchor plate (**70**) each having an arched surface of the same shape (**65, 77**) in the area where the tension nut bears against the anchor plate.

4,523,881

LATERAL FORCE SYSTEM AND SUPPORT FOR SUPPORTING MINE ROOFS

Thomas Ringe, Phoenixville, Pa., assignor to Mine Roof Support Systems, Inc., Spring City, Pa.

Filed Apr. 1, 1983, Ser. No. 481,377
Int. Cl.³ E21D *20/00, 21/00*
U.S. Cl. 405—259 **8 Claims**

1. A supportive force applying bolt for mine roofs adapted for insertion in a vertical hole in a said roof, said bolt comprising a generally U-shaped body member with laterally spaced front edges, said front edges being of continuous smoothly undulating extended stepped wavilinear configurations, a slide member having both longitudinal faces with a continuous smoothly undulating stepped wavilinear configuration similar to that of said body member edges in mating coactable engagement therewith, rotatable means operatively connected to the lower end of said body member and operatively engageable with the lower end of said slide member, said rotatable means being operable to cause relative displacement between said body and slide members through a downward movement of said body member with respect to said slide member, said members upon opposite relative displacement moving and displacing said mating stepped surfaces from low to high portion contact therebetween serving to laterally relatively space said members and create lateral oppositely directed forces against plural contacted side portions of the hole, and thereby lateral opposite forces in the proximate material of said mine roof, said rotable means being in coactive engagement with the mine roof surface adjacent said vertical hole and operable upon rotation to contactably set and position said slide member against material in said hole and to create vertical compressive forces in the mine roof material through coactive downward movement of said slide body and positioned contact of said rotatable means with the mine roof surface.

4,523,882

DRILL PRESS WITH OVERHEAD MOUNT

Robert W. Hengesbach, 7886 Mentor Rd., Mentor, Ohio 44060

Filed May 5, 1982, Ser. No. 374,950
Int. Cl.³ B23B *47/00*
U.S. Cl. 408—236 **8 Claims**

1. A drill press mounting assembly comprising:

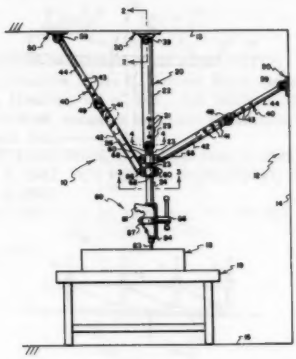
an upright member having connection means at one end thereof for detachably securing an electric drill thereto for use at a work station,

overhead mount means including a pivotal connection attached to the other end of said upright member for supporting said upright member in swingable pendant relation therefrom,

a pair of bracing members disposed respectively in angular relation to said upright member, said bracing members each having respective pivotal connections at each end thereof,

said upright member and each of said bracing members respectively including telescopically extensible portions disposed between said connections thereof thereby to adjustably select a predetermined fixed length for said upright member and each of said bracing members,

each said bracing member having its pivotal connection at one said end adjustably securable at selected positions to said upright member, and,



overhead mount means attached respectively to the said pivotal connection at the other said end of each said bracing member,

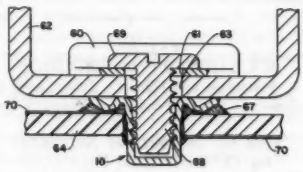
thereby to facilitate positioning of said mounting assembly as necessary by virtue of the said pivotal connections at each end of each said bracing member, whereby an electric drill secured to said pendant upright member is stabilized for drilling operations by said pair of angularly related bracing members through the respective overhead mounts thereof and of said pendant upright member.

4,523,883

PRINTED CIRCUIT BOARD FASTENER

Francis C. Peterson, St. Charles; William G. Rodseth, Elgin, and William A. Spring, Geneva, all of Ill., assignors to Illinois Tool Works Inc., Chicago, Ill.

Filed Oct. 18, 1982, Ser. No. 434,816
Int. Cl.³ F16B *37/06;* **H01B** *7/34*
U.S. Cl. 411—171 **5 Claims**



1. A fastener for use in assembling an article to a printed circuit board having an aperture, said fastener comprising: a generally tubular internally threaded nut body adapted to be inserted into said aperture, a radially extending flange integrally formed at one end of said body, said flange including an integral conical spring washer which flairs radially outwardly and in a direction away from said body, said flange also including an inner first portion immediately adjacent said body, said first portion providing stopping means to limit deflection of

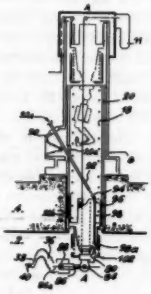
said conical spring washer, said first portion creating a circumferential recess for allowing flow of fluids about said body, a spacer disposed between said first portion and said conical spring washer, said spacer including radial flow channels communicating with said circumferential recess.

4,523,884

REMOTE MANIPULATION ASSEMBLY

Gilles Clément, Paris; Daniel Francois, Vendome; Paul Marchal, Gif Sur Yvette, and Claude Moreau, Nantes, all of France, assignors to Commissariat A L'Energie Atomique, Paris, France

Filed Oct. 8, 1981, Ser. No. 309,604
Claims priority, application France, Oct. 17, 1980, 80 22328
Int. Cl.³ B25T *3/00*
U.S. Cl. 414—8 **4 Claims**



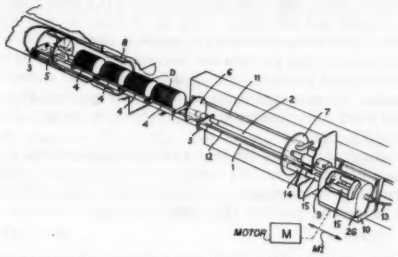
1. A remote manipulating assembly comprising a movable platform (6) carrying a telescopic supporting or carrying assembly at the end of which a multi-part, multi-jointed remote manipulation arm (12) can be displaced inside an enclosure, wherein the platform is located on a wall of the enclosure, at least one opening being provided in the wall to permit the introduction of the telescopic carrying assembly having a longitudinal axis (AA) into the enclosure, and wherein the platform is provided with a hood (8) within which the telescopic carrying assembly and the remote manipulation arm can be completely contained, the hood also being provided in its opening part with means for the tight connection to the wall of the enclosure cooperating with sealing means provided in the opening, and having at its other end means for controlling the displacements of the telescopic carrying assembly, whilst also having connection and supply means for the displacements of the remote manipulation arm, together with its operation and the operation of its tools said telescopic carrying assembly being constituted by a primary telescopic carrying means sliding within the hood and which comprises at least one sleeve (20) whose length is equal to the free internal height of the hold and a carrying carriage (26) moving within the sleeve of the primary telescopic carrying means and carrying a secondary telescopic carrying means supporting said remote manipulation arm, said secondary telescopic carrying means being comprised of a plurality of telescoped tubes (31) each of a length less than the length of said sleeve (20) to allow containment of said tubes and said manipulation arm within said sleeve when said tubes and sleeve are retracted into said hood.

4,523,885

APPARATUS FOR LOADING MAGAZINES INTO FURNACES

Christopher J. Bayne, Lightwater; Joseph L. Lambert, Cobham, and Graham E. Collyer, Ottershaw, all of England, assignors to Heraeus Quarzschmelze GmbH, Hanau, Fed. Rep. of Germany

Filed Apr. 11, 1983, Ser. No. 483,724
Claims priority, application United Kingdom, Apr. 29, 1982, 8212453; Aug. 26, 1982, 8224546; Feb. 9, 1983, 8303592; Feb. 9, 1983, 8303596
Int. Cl.³ F27D *5/00*
U.S. Cl. 414—156 **10 Claims**



1. Apparatus for introducing silicon wafers (D) in magazines (4,104) into a process tube (8,105) of a furnace or diffusion oven, comprising

at least two spaced silica tubes closed at their forward ends, next adjacent the process tube (8), to constitute supporting members (1,2; 14; 101,102) for the loaded magazines (4,104),

a clamping device (9,106) for holding and supporting said members (1,2; 14; 101,102) cantilever-fashion by that end of each member which is remote from the process tube (8),

motor means (M) associated with said clamping device (9,106) for moving said supporting members with the loaded magazines thereon into and out of the process tube (8) in a substantially horizontal direction (M1); and

at least one insert (15,36) reinforcing each supporting member (1,2; 14; 101,102),

said magazines (4,104) and their supporting members (1,2; 14; 101,102) remaining entirely suspended throughout the loading, processing, and unloading operations, and out of contact with the interior wall of the process tube (8).

4,523,886

CONTAINER HANDLER WITH PROGRAMMED ELECTRO-HYDRAULIC CONTROL CIRCUIT

Jerry L. Reeves, Dallas, Oreg., assignor to Towmotor Corporation, Mentor, Ohio

PCT No. PCT/US 82/00057, § 371 Date Jan. 13, 1982, § 102(e) Date Jan. 13, 1982, PCT Pub. No. WO83/02483, PCT Pub. Date Jul. 21, 1983
This PCT application filed Jan. 13, 1982, Ser. No. 349,481
Int. Cl.³ F15B *11/20*; B66F *9/22*
U.S. Cl. 414—641 **6 Claims**

1. A programmed electro-hydraulic control circuit (37) comprising

a pressurized fluid source (38);

a single main control valve (39) connected to said source (38) and movable between first (R) and second (L) positions;

an electrical power source (40);

a master switch (41) connected to said power source (40) and movable between first (A) and second (B) positions;

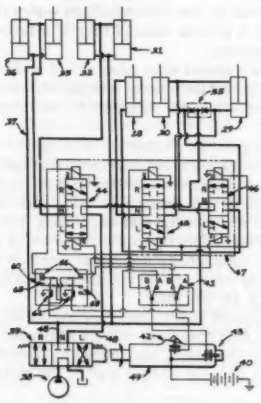
first (42) and second (43) switches each movable between a closed position connecting said power source (40) to said master switch (41) and an open position disconnecting said power source (4) from said master switch (41);

a plurality of solenoid-actuated control valve means (44,45,46), each connected to said main control valve (39) and to said master switch (41), and each actuatable to a preselected first (R) or second (L) position thereof in response to, said master

switch (41) being in either one of its first (A) or second (B) positions, and at least one of said first (42) and second (43) switches being in its closed position, said main control valve (39) being further movable to a neutral position (N), between its first (R) and second (L) positions, preventing communication of said pressurized fluid source (38) to said control valve means (44,45,46) and wherein said control valve means (44,45,46) includes first (44), second (45) and third (46) control valve means each further movable to a neutral position (N) between the first (R) and second (L) positions thereof;

first cylinder means (18) for extending in response to positioning of said main control valve (39) being in its first position (R) and retracting in response to positioning of said main control valve (39) in its second position (L) with both such extension and retraction being in response to said master switch (41) being in its first (A) position, said first switch (42) being in its open position and said second switch (43) being in its closed position, each of said first (44) and second (45) control valve means being in its neutral position (N), and said third control valve means (46) being in its second position (L);

second cylinder means (35,36) for extending in response to said main control valve (39) being in its first position (R) and retracting in response to said main control valve (39) being in its second position (L) with both such extensions and



retraction being in response to positioning of said master switch (41) in its first position (A), positioning of said first switch (42) in its closed position, positioning of said second switch (43) in its open position, positioning of said first control valve means (44) in its first position (R), positioning of said second control valve means (45) in its neutral position (N), and positioning of said third control valve means (46) in its neutral position (N); and

a pair of third cylinder means (29,30) for alternately extending or retracting when said main control valve (39) is in its first (R) or second (L) position, respectively, with both such extension and retraction being in response to said master switch (41) being in its first position (A), said first switch (42) being in its closed position, said second switch (43) being in its closed position, said first control valve means (44) being in its neutral position (N), said second control valve means (45) being in its second position (L), and said third control valve means (46) being in its first position (R).

4. A programmed electro-hydraulic control circuit (37) in combination with a container handler (10,11) having a mast assembly (12), a carriage (16) mounted for vertical movement on said mast assembly (12), and a container handling attachment (10) including a lower frame assembly (17) slidably mounted for side shifting on said carriage (16), side shift cylinder means (18) for laterally shifting said lower frame assembly (17) on said carriage (16), an upper frame assembly (21) mounted for vertical and pivotal movement on said lower from assembly (17), a pair of lift and tilt cylinder means (29,30) for selectively lifting opposite ends of said upper frame assembly (21) simultaneously or for lifting one such end relative to the other end on said lower frame assembly (17), a pair of extensible members (23,24) slidably mounted on opposite ends of said upper frame assembly (21), spread cylinder means (31,32) for selectively extending said extensible members (23,24), a latch (33,34) movably mounted on the end of each of said extensible members (23,24), latch cylinder means (35,36) for moving each said latch (33,34) to lock a container on said carriage (16), said control circuit (37) including

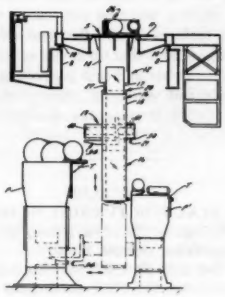
a pressurized fluid source (38), a main control valve (39) connected to said source (38) and movable between said first (R) and second (L) positions, an electrical power source (40), a master switch (41) connected to said power source (40) and movable between first (A) and second (B) positions, first (42) and second (43) switches each movable between a closed position connecting said power source (40) to said master switch (41) and an open position disconnecting said power source (40) from said master switch (41), and a plurality of solenoid-actuated control valve means (44, 45, 46) for selective actuation to first (R) and second (L) positions thereof in concurrent response to, said master switch (41) being in either one of its first (A) or second (B) positions, and at least one of said first (42) and second (43) switches being in its closed position, each of said control valve means (44,45,46) being connected to said main control valve (39) and to said master switch (41) and further connected to at least one of said cylinder means (18,29,=32,35,36) to control actuation thereof, said main control valve (39) being further movable to a neutral position (N), between its first (R) and second (L) positions, preventing communication of said pressurized fluid source (38) to said control valve means (44,45,46) and wherein said control valve means (44,45,46) includes first (44), second (45) and third (46) control valve means each further movable to a neutral position (N) between the first (R) and second (L) positions thereof, said side shift cylinder means (18) being responsive for extending in response to positioning of said main control valve (39) in its first position (R) and retracting in response to positioning of said main control valve (39) in its second position (L) with both such extension and retraction being in response to said master switch (41) being in its first (A) position, said first (42) switch being in its open position and said second switch (43) being in its closed position, each of said first (44) and second (45) control valve means being in its neutral position (N), and said third control valve means (46) being in its second position (L), each said latch cylinder means (35,36) being responsive for extending in response to said main control valve (39) being in its first position (R) and retracting in response to said main control valve (39) being in its second position (L) with both such extension and retraction being in response to positioning of said master switch (41) in its first position (A), positioning of said first switch (42) in its closed position, positioning of said second switch (43) in its open position, positioning of said first control valve means (44) in its first position (R), positioning of said second control valve means (45) in its neutral position (N), and positioning of said third control valve means (46) in its neutral position (N), and each of said lift and tilt cylinder means (29,30) being responsive for alternately extending or retracting when said main control valve (39) is in its first (R) or second (L) position, respectively, with both such extension and retraction being in response to said master switch (41) being in its first position (A), said first and second switches (42) being in their closed positions, said first control valve means (44) being in its neutral position (N), said second control valve means (45) being in its second position (L), and said third control valve means (46) being in its first position (R).

4,523,887

STACKER CRANE FOR NARROW AISLES

Donald P. Reiff, Wauwatosa, Wis., assignor to Harnischfeger Corporation, West Milwaukee, Wis.

Filed Apr. 6, 1983, Ser. No. 482,572
Int. Cl.³ B60P *1/04*; B65G *1/00*; B66C *17/10*
U.S. Cl. 414—664 **1 Claim**



1. A stacker crane comprising a mast extending along a vertical axis, transport means supporting the mast for horizontal motion, and load supporting means positionable vertically along the mast, said transport means comprising an elevated trolley having a turntable thereon to which the mast is connected for rotation about said axis, and wherein a winch on said turntable, connected with the load supporting means by a cable, positions the load supporting means vertically along the mast, said stacker crane characterized by:

A. the mast having a short tubular upper portion concentric to said axis and connected to the turntable, through which said cable extends;

B. the mast comprising a pair of vertically extending mast elements that are spaced to opposite sides of said axis,

(1) each of said mast elements having at its upper end a rigid connection to a transversely extending beam secured to said tubular upper portion;

C. the masts being connected with said transport means for rotation about said axis;

D. the load supporting means comprising a carriage member, said carriage member

(1) being of inverted U-shaped with a pair of vertically extending legs connected at their upper ends by a sidewardly extending bight portion,

(a) said cable having a connection to the bight portion of the carriage member,

(2) being disposed between the mast elements with each of its legs guidingly engaging one of them, and

(3) having a pair of horizontally extending parallel and opposite tracks, one on each leg,

(a) each projecting in both a forward and a rearward direction beyond its leg, and

(b) each defining a pair of opposite track surfaces that extend along at least a major portion of its length,

(i) one of which faces upwardly and

(ii) the other of which faces downwardly,

(c) each of said tracks having a groove therein which opens towards the other track and which defines said surfaces;

E. the load supporting means further comprising

(b) a frame confined between the tracks,

(2) a pair of load engaging tongues projecting forwardly beyond said frame,

(a) said tongues being mounted on said frame for translatory sideward motion,

(3) two pairs of rollers on said frame, one pair for each of said tracks,

(a) a front roller of each pair being rollingly engaged with said upwardly facing surface on its track,

(b) the rear roller of each pair being rollingly engaged with said downwardly facing surface on its track, and

(c) all of said rollers having their axes substantially contained in a single horizontal plane;

F. actuating means carried by the frame and connected with each of the tongues for adjustingly moving the tongues sidewardly towards and from one another; and

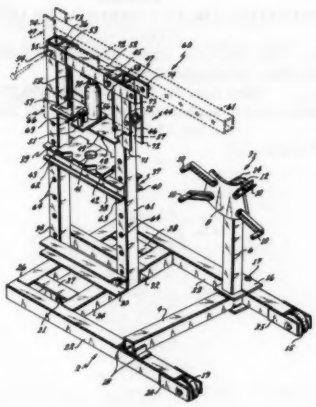
G. means on said frame for reversibly rotatably driving one roller of each of said pairs, for moving the frame along said tracks to an extended forward position in which said tongues project beyond the front ends of said tracks and to a retracted rearward position in which said tongues are near said axis.

4,523,888

COMBINED ENGINE-HANDLING AND METALWORKING MACHINE

Richard S. Pezzner, Northridge, and George L. Rader, Sun Valley, both of Calif., assignors to RSP Innovation Design Mfg., Inc., No. Hollywood, Calif.

Filed Jan. 26, 1984, Ser. No. 574,005
Int. Cl.³ B30B *1/04*
U.S. Cl. 414—680 **5 Claims**



1. A combination engine-handling and metalworking machine comprising:

a. A support structure, said support structure comprising a pair of horizontally disposed spaced parallel hollow beams each of which is connected at one end thereof to wheels and interconnected at the opposite end thereof by a pair of first and second cross pieces, said cross pieces being joined near the ends thereof by caster mounts with underlying casters,

b. A crane means which may be erected thereon, said crane means comprising a vertical post having horizontally disposed spaced parallel channel beams attached to and extending from the lower end of said post in spaced parallel relation to and in between said pair of hollow beams, said post being mountable upon said first and second cross pieces; a boom attached to the upper end of said vertical post and extending generally in perpendicular relation thereto; and power means for pivoting said boom about said vertical post, said power means having a top and base portion;

c. A carrying means that may be erected upon said support structure to which an engine or other object may be secured;

d. A press means, including said vertical post, said boom that

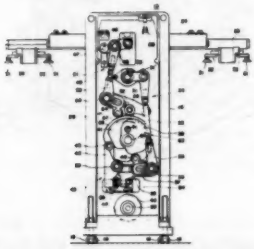
is adaptable as a stanchion for use with said press means, said boom being joined and secured at the bottom end thereof to the ends of said horizontally disposed spaced parallel channel beams that are opposite the ends of said channel beams attached to said vertical post; a third horizontally disposed cross piece extending above and in spaced parallel relation to said horizontally disposed spaced parallel channel beams and connected at each end thereof to the top ends of said vertical post and said boom, respectively, said third cross piece comprising means for receiving and securing said top portion of said power means; first and second springs; first means for attachment of the upper ends of said first and second springs to said third cross piece; a horizontally disposed guide member having ends that engage said vertical post and said boom to permit slidable vertical movement thereof, said member including means thereon for receiving and securing said base portion of said power means, which is adaptable for use with said crane means to raise and lower said boom; a second means for attachment of said guide member to the lower ends of said first and second springs; fourth and fifth horizontally disposed spaced parallel cross pieces that engage and are secured to said vertical post and said boom; and a pair of press plates that are supported by said fourth and fifth cross pieces.

4,523,889

APPARATUS FOR AUTOMATICALLY DELIVERING WORKPIECE

Masaru Orii, Machida, Japan, assignor to Kabushiki Kaisha Orii Jidoki Seisakusho, Japan

Filed Apr. 21, 1982, Ser. No. 370,570
Claims priority, application Japan, Feb. 16, 1982, 57-023377
Int. Cl.³ F16H *25/12*
U.S. Cl. 414—752 **3 Claims**



1. An apparatus for automatically delivering a workpiece which comprises:

(a) a body;

(b) a horizontally-disposed support member mounted on said body for vertical movement;

(c) a horizontally-disposed slide bar supported by said support member for horizontal movement therealong, said slide bar having a pair of workpiece holders at its opposite ends;

(d) first cams and a second cam mounted on a common cam shaft and having their respective cam surfaces, said first cams consisting of a cam **38** and an auxiliary cam **41**;

(e) first and second cam mechanisms operable respectively in response to said cam surface of said first and second cams, said first cam mechanism including cam levers **35** and **42**, rollers **40** and **43** and a belleville spring **44**, and said second cam mechanism including a cam lever **52**, a roller **57** and a coil spring **58**;

(f) a first displacement transmitting mechanism operatively connecting said first cam mechanism to said slide bar for displacing said slide bar horizontally, said first displacement transmitting mechanism including a lever **31'**, an upper rod end **31**, an extensible rod **32** and a lower rod end **33**;

(g) a second displacement transmitting mechanism operatively connecting said second cam mechanism to said support member for displacing said support member vertically, said second displacement transmitting mechanism including an upper rod end **48**, an extensible rod **49** and a lower rod end **50**;

(h) a motor having an output shaft connected to said cam shaft for rotating said first and second cams; and

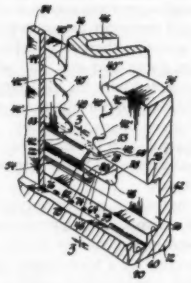
(i) said cam surfaces of said first and second cams having such configurations that upon one revolution of said cam shaft, said slide bar and said support member are moved horizontally and vertically, respectively, in a sequential manner, thereby moving the workpiece in a predetermined manner.

4,523,890

END SEAL FOR TURBINE BLADE BASE

Douglas K. Thompson, Speedway, Ind., assignor to General Motors Corporation, Detroit, Mich.

Filed Oct. 19, 1983, Ser. No. 543,492
Int. Cl.³ F01D *5/08, 5/30*
U.S. Cl. 416—95 **3 Claims**



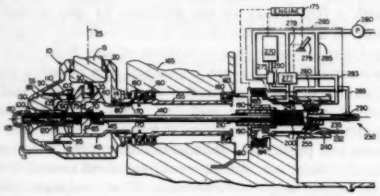
1. In a gas turbine engine rotor including a wheel rotatable about an axis of said engine with an upstream face and a downstream face in planes perpendicular to said axis and a plurality of circumferentially arrayed retention slots between said faces with lugs on opposite sides of said slots, a plurality of blades each having a base with lugs thereon slidably disposed in a corresponding one of said slots and defining therewith a root manifold with said base lugs engaging said slot lugs for blade retention and for defining seals on opposite sides of said root manifolds at predetermined radii from said engine axis, and means for directing pressurized air to each of said root manifolds through one of said upstream and said downstream faces, an end seal comprising, means on said wheel and on each of said blades defining an annular groove in the other of said upstream and said downstream faces traversing each of said bases and including a cylindrical outboard edge at a radius from said engine axis generally equal to said predetermined radius and a cylindrical inboard edge inboard of each of said slots and an annular slot face parallel to said other face, an annular imperforate seal ring in said groove having a right cylindrical flange adjacent said outboard edge and a foot engaging said slot face in a circle of contact inboard of each of said slots, said flange being centrifugally thrust against said outboard edge during rotation of said wheel to effect a 360° seal around said wheel outboard of each of said root manifolds, and means biasing said foot against said slot face during rotation of said wheel to effect a 360° seal around said wheel inboard of each of said root manifolds.

4,523,891

PROPELLER PITCH CHANGE ACTUATION SYSTEM

Robert A. Schwartz, Vernon, and Jerome G. Duchesneau, Andover, both of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Jun. 15, 1983, Ser. No. 504,641
Int. Cl.³ B64C 11/38
U.S. Cl. 416—157 R 14 Claims



1. A system for adjusting the pitch of a variable pitch propeller, said propeller comprising a plurality of blades (15), each of said blades being mounted to a hub (10) and operably connected to a first output member (45) associated with a fluid driven pitch change actuator (87) pressurizable with fluid from a source thereof, movement of said first output member effecting an adjustment in blade pitch, said system being characterized by:

an input actuator (230) having a second output member (235);

a valve (95 and 120) disposed within said hub, adjacent to said pitch change actuator and in fluid communication therewith for selectively pressurizing said pitch change actuator to effect a desired adjustment in blade pitch; and

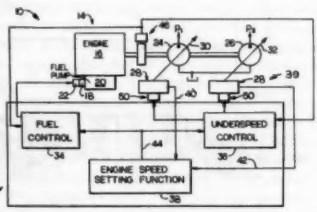
a conduit (140) operatively connecting said second output member to said valve for transmitting movement of said second output member to said valve for selectively positioning the valve and for providing through the interior of said conduit means, fluid from said source to said valve and said pitch change actuator.

4,523,892

HYDROSTATIC VEHICLE CONTROL

Randall M. Mitchell, Washington, and John T. Armstrong, Jr., Chillicothe, both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed May 14, 1984, Ser. No. 609,676
Int. Cl.³ F04B 49/00, 1/26
U.S. Cl. 417—34 17 Claims



1. An apparatus for controlling an internal combustion engine having a rack for controlling a fuel injection pump, and at least one variable displacement hydraulic pump, said pump having a load sensing means for detecting hydraulic load and adjusting inclination of a swash plate in response to hydraulic flow and load requirements, the apparatus comprising:

first means for detecting the displacement of said hydraulic pump and delivering a first signal responsive to the displacement of said hydraulic pump;

second means for detecting the rotational speed of said engine and delivering a second signal responsive to said rotational speed;

control means for receiving said first signal and delivering a third signal responsive to the magnitude of said first signal;

underspeed control means for receiving said second and third signals, comparing said second and third signals, and delivering a fourth signal in response to said third signal being greater than said second signal;

swash plate actuator means for receiving said fourth signal and reducing the angle of inclination of said swash plate by an amount responsive to the magnitude of said fourth signal;

fuel control means for receiving said second and third signals, comparing said second and third signals, and delivering a fifth signal in response to said third signal being less than said second signal; and,

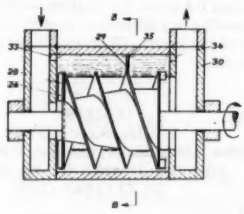
rack actuator means for receiving said fifth signal and controlling the supply of fuel to said engine responsive to the magnitude of said fifth signal.

4,523,893

LIQUID RING PUMP

Willy Johst, Vingårdsgade 13, DK-9000 Aalborg, and Henrik Elsass, Sophus Bauditzvej 13, DK-2920 Charlottenlund, both of Denmark

Filed Sep. 23, 1983, Ser. No. 535,026
Claims priority, application United Kingdom, Dec. 9, 1982, 8235149
Int. Cl.³ F04C 19/00
U.S. Cl. 417—68 16 Claims



1. A liquid ring pump including a helically bladed rotor (2) eccentrically mounted in an elongated pump casing (1) and including a hub (3) for supporting the rotor, a suction inlet (18) and a discharge outlet (19) positioned at respective ends of the pump casing (1), characterized by a preferably circular plate (26) being fixedly mounted on the hub proximate that one of the respective ends of pump casing at the inlet and for closing the open space between the bladings ends at the inlet, and access to the space between the bladings is given only through one or more openings (27) in the plate (26).

4,523,894

EJECTOR PUMP WITH RINGSHAPED NOZZLE

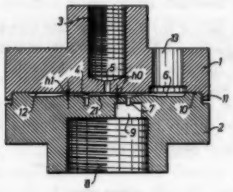
Lennart Forslund, Upsala, and Örjan Nilsson, Solna, both of Sweden, assignors to Svenska Rotor Maskiner Aktiebolag, Nacka, Sweden

Filed Jun. 1, 1984, Ser. No. 616,556
Claims priority, application Sweden, Jun. 3, 1983, 8303162
Int. Cl.³ F04F 5/00
U.S. Cl. 417—161 4 Claims

1. In an ejector pump including two opposed integral blocks, each having end surfaces and defining between said end surfaces an annular nozzle slot for a pumping mediu, said nozzle slot being directed mainly radially outwards; an annular mixing zone situated radially outside said nozzle slot; an outlet open-

ing in said mixing zone in at least one of said blocks, said outlet opening including at least one mainly axially directed secondary channel in communication with said mixing zone; and an annular diffuser slot situated radially outside said mixing zone; the nozzle slot, the mixing zone and the diffuser slot being defined by an interspace (12) between end surfaces (4, 6) of said two integral blocks (1, 2) separated by spacer means (10), the improvement wherein:

portions of at least one of said end surfaces (6) form walls of said nozzle and diffuser slots and are separated by an annular groove (7) positioned in said end surface (6) and connected to at least one passage (9) forming together with the groove (7) said secondary channel,



the diffuser slot height close to the groove (7) is larger than the nozzle slot height (h_0) close to the groove and decreasing in the shape of at least two bevels (Z_1 and Z_2) having bevel angles α_1 and α_2, the bevel angle α_1, of one of said bevels (Z_1) closest to the groove being 8° to 15°, inclusive, and the angle α_2 of another of the said bevels being 4° to 8°, inclusive, the ratio α_1/α_2 being from 1.25–3.25 and each bevel having a width of at least 0.5 times the smallest groove width, the diffuser slot height (h_1) being substantially constant and amounting to 0.84–0.97 times the nozzle slot height (h_0) close to the groove (7) along a distance of at least 0.8 times the smallest width of the groove (7) commencing at a distance of at most 4.9 times the smallest width of the groove (7) from the outermost edge of the nozzle (21).

4,523,895

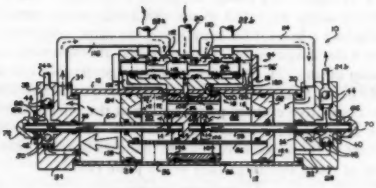
FLUID INTENSIFIER

Ethan A. Silva, 410 McAuley, Oakland, Calif. 94609

Filed Dec. 28, 1982, Ser. No. 454,062

Int. Cl.³ F04B *17/00*

U.S. Cl. 417—225 **13 Claims**



1. A fluid intensifier powered by a pressurized fluid source and comprising:

(a) an elongated main cylinder assembly having a first end portion provided with a first end portion orifice and a first main cylinder assembly outlet; a second end portion provided with a second end portion orifice and a second main cylinder assembly outlet; and a solitary input port into which fluid from a pressurized fluid source may flow;

(b) a stationary assembly including a fixed piston centrally located within said main cylinder assembly; a first output tube extending between said first end portion and said fixed piston; and a second output tube extending between said second end portion and said fixed piston; wherein both said first output tube and said second output tube are provided with apertures proximate their ends permitting fluid communication through said tubes;

(c) a reciprocating assembly including a first movable piston disposed within said main cylinder assembly between said first end portion and said fixed piston; a second movable piston disposed within said main cylinder assembly between said second end portion and said fixed piston; and a movable cylinder coupling said first movable piston to said second movable piston and enclosing said fixed piston; said reciprocating assembly completing a pump cycle with a first stroke in the direction of said second end portion and a second stroke in the direction of said first end portion such that a portion of said fluid from said pressurized fluid source is pumped at a pressure greater than that of the pressurized fluid source through said first output tube and out said first main cylinder assembly outlet during said first stroke, and a portion of said fluid from said pressurized fluid source is pumped at a pressure greater than that of the pressurized fluid source through said second output tube and out said second main cylinder assembly outlet during said second stroke, the remainder of said fluid from said pressurized fluid source being exhausted from said main cylinder at a pressure less than that of the pressurized fluid source; and

(d) bistable valve means coupled to said main cylinder assembly and having a first stable state and a second stable state; said bistable valve means switching from said first stable state to said second stable state at the end of said first stroke, and switching from said second stable state to said first stable state at the end of said second stroke; and bistable valve means including first means moved between said first stable state and said second stable state by the movement of said reciprocating assembly and operative to develop a hydraulic signal of its stable state, and second means responsive to said hydraulic signal and operative to direct said pressurized fluid source to said first end portion orifice when said first means is in said first stable state, and to couple said pressurized fluid source to said second end portion orifice when said first means is in said second stable state.

4,523,896

CENTRIFUGAL COMPRESSOR

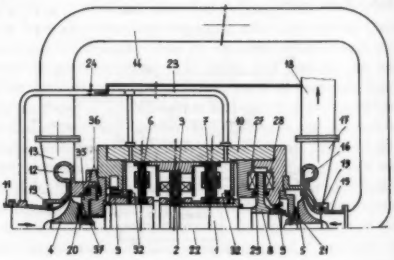
Bernard Lhenry, and Max Roustan, both of Le Creusot, France, assignors to Creusot-Loire, Paris, France

Filed May 16, 1983, Ser. No. 494,844

Claims priority, application France, Jun. 4, 1982, 82 09771

Int. Cl.³ F04B *35/04;* **F16C** *39/06;* **F04D** *29/08*

U.S. Cl. 417—244 **4 Claims**



1. A centrifugal compressor capable of rotating at high speed, comprising

(a) a single shaft carrying at least two compressor wheels cantilevered on its two ends for setting in motion fluid to be compressed;

(b) a high-speed electric motor comprising a rotor carried by said shaft and located in a central portion of said shaft;

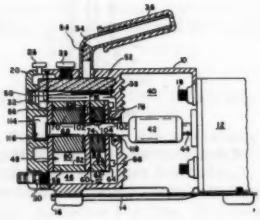
(c) at least two magnetic bearings for supporting said shaft;
(d) a magnetic stop for adjusting the axial position of said shaft;
(e) a housing surrounding at least said electric motor, said magnetic bearings and said magnetic stop;
(f) at least one first facial sealing means located at one of said compressor wheels and adjustable as a result of axial displacement of said shaft by means of said magnetic stop;
(g) at least one second facial sealing means located at the second compressor wheel and adjustable as a result of a controlled longitudinal displacement of a supporting component; and
(h) circuit means for placing the space within said housing under a predetermined partial vacuum.

4,523,897

TWO STAGE VACUUM PUMP

Ralph C. Lower, Bryan, and Gary P. Murray, Montpelier, both of Ohio, assignors to Robinair Division, Montpelier, Ohio

Continuation of Ser. No. 387,620, Jun. 11, 1982, abandoned.
This application Jul. 16, 1984, Ser. No. 630,351
Int. Cl.[3] F04B *23/04;* F04C *25/02*
U.S. Cl. 417—244 **1 Claim**



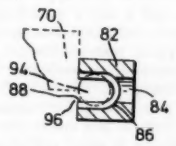
1. A two stage rotary vacuum pump including a pump module having first and second pumping chambers defined therein each having a cylindrical circumference, a rotor shaft rotatably mounted within the module extending through the chambers and eccentrically related thereto, an electric motor drivingly connected to the rotor shaft, first and second rotors each having an axis, lateral sides, and fixed to the shaft located within the first and second chambers, respectively, at least one non-radial vane movably mounted in each rotor extending from the periphery thereof having an outer end engaging the associated chamber circumference and translatable between extended and rectracted positions, the vane being in a gas compression exhausting position at its retracted position and the outer end having trailing and leading edges with respect to the direction of rotor rotation, a valve plate located intermediate the rotors having a port defined therein establishing communication between the chambers at predetermined rotational positions of the rotors, an exhaust plate disposed adjacent the second rotor having an exhaust port defined therein selectively communicating with the second chamber at a predetermined rotational position of the second rotor, the improvement comprising, each of the rotors including a cylindrical circumference and lateral sides radially perpendicular to the rotor shaft, the lateral side of the first rotor adjacent the valve plate and both lateral sides of the second rotor being recessed intermediate the associated rotor circumference and the rotor shaft, an annular hub defined upon the recessed lateral sides of the rotors adjacent the rotor shaft, the rotor recesses being of an annular configuration and located intermediate the associated rotor circumference and hub, a slot defined in each rotor intersecting the associated rotor lateral side recesses, the rotor vane being slidably mounted within said slot, the port within the valve plate communicating with said rotors' recesses whereby fluid pressure within the second chamber biases the vanes toward the chambers' circumferences and hydraulic axial forces upon the second rotor are substantially balanced, the vanes' outer ends comprising a cylindrical segment surface having a radius substantially equal to the radius of the associated chamber circumference and having a center coinciding with the axis of the associated chamber at the vanes' retracted position whereby the entire outer ends of the vanes engage the chamber circumference at the termination of the compression cycle at the vanes' retracted position to produce optimum compression and reduce the likelihood of gas re-expansion, the valve intermediate the rotors comprising a relatively thin plate and including first and second parallel sides, said first side defining a portion of the first chamber and said second side defining a portion of the second chamber, said valve plate port comprising a first recess defined in said valve plate intersecting said first side, a second recess defined in said valve plate intersecting said second side and an axial passage defined in said valve plate directly intersecting said valve plate sides and communicating with said recesses, said recesses being elongated in the direction of rotor rotation and offset with respect to each other in the direction of rotor rotation, said passage being located centrally with respect to said recesses in the direction of rotor rotation.

4,523,898

HYDRAULIC WOBBLE PUMPS

Paul H. Martin, and John C. Martin, both of Toronto, Canada, assignors to Diesel Equipment Limited, Toronto, Canada

Filed Jan. 10, 1984, Ser. No. 569,616
Int. Cl.[3] F01B *31/00, 1/18*
U.S. Cl. 417—269 **2 Claims**

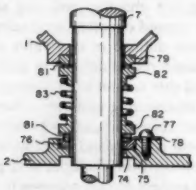


1. In an hydraulic wobble pump having, a housing assembly which has first and second oppositely disposed outer ends, a wobble chamber and a power transmission chamber formed in said housing, a wobble shaft mounted for rotation in said housing and extending into said wobble and power transmission chambers, said wobble shaft having an inner end located in said wobble chamber, a power transmission gear removably mounted on said wobble shaft and located in said power transmission chamber, a plurality of pistons slidably mounted in cylinders formed in said housing and extending longitudinally from said wobble chamber to said first outer end of said housing at circumferentially spaced intervals about the periphery of a central portion of said housing, the improvement of;
(a) a service passage formed at said second end of said housing and opening into said power transmission chamber, said passage being proportioned to permit said power transmission gear to pass therethrough when being mounted on or removed from the wobble shaft when it is located in said power transmission chamber,
(b) an end plate removably mounted at said second outer end of said housing for closing said service passage,
(c) a fluid inlet passage extending inwardly from said first outer end through said central portion of said housing and opening into said wobble chamber directly opposite said inner end of said wobble shaft to permit an anvil shaft to extend therethrough to provide a support which will support the wobble shaft when said power transmission gear is being mounted on wobble shaft when it is located in said housing.

4,523,899
SUBMERGIBLE MOTOR PUMP ASSEMBLY

Kiyoshi Ouchi, Fujisawa, Japan, assignor to Ebara Corporation, Tokyo, Japan

Filed Mar. 7, 1983, Ser. No. 472,833
Claims priority, application Japan, Dec. 15, 1982, 57-219494
Int. Cl.³ F04B 39/02, 21/02
U.S. Cl. 417—360 4 Claims



1. A submergible motor pump assembly comprising:

a motor section having a motor shaft extending downwardly from the motor section;

a pump section disposed axially below said motor section and encasing an impeller mounted at the end of said motor shaft extending into the motor section;

an intermediate unit disposed between said motor and pump section so as to assemble said sections to said unit by mechanical fastening means for coupling said two sections to said unit in the axially opposite directions, respectively, so that said motor shaft extends through said unit, said unit including a mechanical seal means in a chamber provided in said unit to seal said two sections from each other and containing oil for lubricating said mechanical seal,

said chamber being defined by an upper member, a lower member connected to said upper member with a space therebetween, and a sleeve extending in said space between said upper and lower members, said sleeve being adapted to support said mechanical seal means thereabout and to receive said shaft therethrough, said upper member constituting a lower bracket for the motor section to support a lower bearing for rotatably supporting said shaft at the bottom of said motor section and said lower member constituting an upper wall of an impeller chamber of said pump section; and

means for retaining said sleeve and said mechanical seal means in said intermediate unit when said shaft is removed from said intermediate unit, whereby the oil in said chamber need not be removed when said motor shaft is removed for maintenance.

4,523,900
IMPELLER PUMP WITH SELF-PRIMING COLUMN ATTACHMENT

Max Frey, Portland, Oreg., assignor to Roper Industries, Inc., Commerce, Ga.

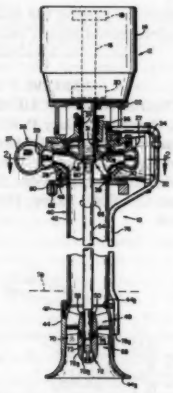
Filed Mar. 22, 1984, Ser. No. 592,462
Int. Cl.³ F04B 17/00
U.S. Cl. 417—365 6 Claims

1. The combination of

a motor-driven centrifugal pump assembly including an impeller housing with an inlet as the base thereof, an impeller within said housing facing said inlet, and a motor including an output shaft disposed above the impeller housing, said output shaft extending into and being drivingly connected to said impeller,

a self-priming column attachment detachably secured to the pump assembly including an elongate hollow column having its upper end secured to the impeller housing with the interior of the column connecting with said inlet, an elongate shaft extension extending axially within said column with a detachable connection between the upper end of said shaft extension and said output shaft, bearing means rotatably supporting said shaft extension within said column adjacent the bottom end of the column, and an axial flow inducer within said column connected to said shaft extension,

said impeller housing having walls defining a double-volute impeller chamber enclosing the impeller within the housing, and a balance chamber disposed upwardly of and behind the impeller receiving fluid under pressure from the impeller, and



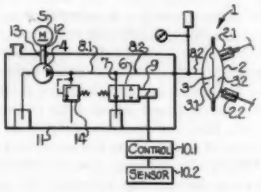
a balance line conduit connected at its upper end with said balance chamber and extending to an open, lower end disposed at substantially the level of said axial flow inducer,

said double-volute chamber serving to radially balance said output shaft in the region of said connection between said shaft extension and said output shaft and said balance line conduit serving to axially balance said shaft extension which extends from said connection.

4,523,901
CONTROL APPARATUS FOR A POSITIVE DISPLACEMENT RECIPROCATING PUMP

Heinz Schippers, Remscheid; Siegfried Hertell, Radevormwald, and Otwin Eich, Remscheid, all of Fed. Rep. of Germany, assignors to Barmag Barmer Maschinenfabrick AG, Remscheid, Fed. Rep. of Germany

Filed Oct. 13, 1982, Ser. No. 434,172
Claims priority, application Fed. Rep. of Germany, Oct. 17, 1981, 3141359; Nov. 28, 1981, 3147235; Apr. 1, 1982, 3212112
Int. Cl.³ F04B 9/08, 35/02
U.S. Cl. 417—395 11 Claims



1. A positive displacement reciprocating pump for conveying a liquid or gaseous fluid, and comprising

a fluid enclosure,

movable piston means disposed in said enclosure and sealably dividing the enclosure into a pumping chamber on

one side of the piston means and an actuating chamber on the other side thereof,

an inlet valve and a separate outlet valve each communicating with said pumping chamber,

control means for intermittently supplying a pressurized working fluid to said actuating chamber so as to intermittently move said piston means along a stroke which extends in a direction toward said pumping chamber and thereby discharge the conveyed fluid from such chamber, said control means including a source of pressurized working fluid adapted to deliver a substantially constant flow of working fluid, a working fluid line extending between said source and said actuating chamber for delivering such constant flow to said actuating chamber, and valve means operatively connected to said working fluid line for intermittently opening said line to a discharge tank or the like to release the pressure therein, said control means further including means for actuating said valve means in a sequence of working times and idle times, with each of the working times consisting of a closed time period wherein pressure is maintained in said working fluid line and an open time period wherein said pressure is released in said line, with each of said working times being of essentially uniform duration and with the closed time periods of the working times being of essentially uniform duration which is sufficient to move said piston means along its predetermined stroke, and with the pressure in said line being released during said idle times.

4,523,902

DIAPHRAGM PUMP FOR USE IN AN EXPLOSIVE ATMOSPHERE

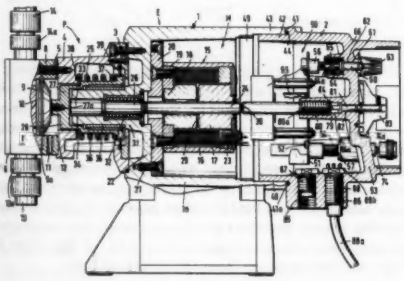
Michael Wally, Bammental, Fed. Rep. of Germany, assignor to Chemie und Filter GmbH Verfahrenstechnik KG, Heidelberg, Fed. Rep. of Germany

Filed Jan. 21, 1983, Ser. No. 459,790

Claims priority, application Fed. Rep. of Germany, Jan. 23, 1982, 3202069

Int. Cl.[3] **F04B** *17/04, 43/04;* **F01B** *19/02;* **F16J** *1/10*

U.S. Cl. 417—410 **28 Claims**



1. A fluid flow machine comprising a diaphragm pump having a diaphragm; means for driving said pump including electromagnet means having a movable armature and means for deforming said diaphragm in response to movement of said armature, said deforming means comprising a discrete motion transmitting member disposed between said diaphragm and said armature, a second member interposed between said motion transmitting member and said diaphragm and means for yieldably biasing said second member against said motion transmitting member, said motion transmitting member being located between said second member and said armature and being in contact with said second member and said armature solely under the action of said biasing means; a common, pressure-resistant enclosure for said pump and said driving means, said enclosure including a main portion, a cover and means for securing said cover to said main portion, said main portion having a first part surrounding at least a portion of said pump and a second part surrounding said electromagnet means, said second part comprising a peripheral wall which surrounds said electromagnet means, an end wall integral with said peripheral wall and disposed between said electromagnet means and said first part, and a sleeve integral with said end wall and projecting towards said first part, said sleeve having first and second sections and said motion transmitting member being movably mounted in said sleeve, the outer diameter of said motion transmitting member and the inner diameter of said first section being approximately equal to prevent the propagation of ignition between the interior of said second part and the interior of said first part of said enclosure, said cover being snugly interfitted with said main portion to prevent the propagation of ignition between the interior of said enclosure and the surrounding atmosphere, said main portion having a first cylindrical surface and said cover having a second cylindrical surface, one of said surfaces surrounding the other of said surfaces and the snug fit between said cover and said main portion being disposed between said surfaces; and bearing means in said second section of said sleeve arranged to guide said motion transmitting member.

4,523,903

DOSING PUMP

Hans Arens, Wertingen, Fed. Rep. of Germany, assignor to Grunbeck Wasseraufbereitung GmbH, Hochstadt, Fed. Rep. of Germany

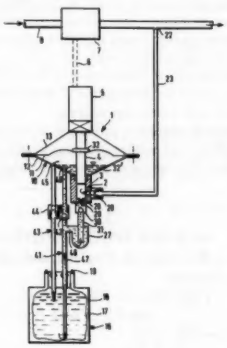
PCT No. PCT/EP83/00084, § 371 Date Nov. 9, 1983, § 102(e) Date Nov. 9, 1983, PCT Pub. No. WO83/03447, PCT Pub. Date Oct. 13, 1983

PCT Filed Mar. 22, 1983, Ser. No. 557,150

Claims priority, application Fed. Rep. of Germany, Mar. 24, 1982, 3210821

Int. Cl.[3] **F04B** *7/04, 23/04*

U.S. Cl. 417—489 **6 Claims**



1. A dosing pump comprising a pump cylinder having a first inlet, a second inlet and an outlet, a suction valve and a discharge valve being provided at the second inlet and the outlet, respectively,

a dosing piston cooperating with the pump cylinder,

a diaphragm connected with the dosing piston and being disposed within a diaphragm chamber disposed at a level above the pump cylinder,

wherein the diaphragm chamber is connected with a container for dosing agent via a suction conduit comprising a suction valve and a return conduit comprising a pressure valve, and with the pump cylinder via a connection forming the first inlet of the pump cylinder,

the dosing piston extending through this connection and allowing fluid to enter the pump cylinder from the diaphragm chamber when the dosing piston emerges from

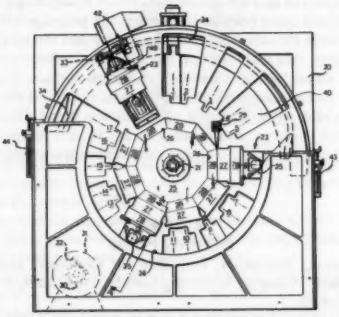
the pump cylinder, and wherein a suction line is provided which connects the second inlet with the suction conduit.

4,523,904

BLOW MOLDING APPARATUS

Merritt W. Martin, Saline, Mich., assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed Mar. 28, 1984, Ser. No. 594,075
Int. Cl.³ B29C *1/16, 17/07*
U.S. Cl. 425—539 **13 Claims**



1. In a blow molding apparatus wherein a plurality of sets of molds are mounted on a wheel rotatable about an axis and the molds are moved toward and away from one another to enclose a parison and the parison is blown to the confines of the cavity between the mold sections as the wheel rotates by the application of air, an apparatus for controlling the application of the air comprising:

a valve assembly associated with each set of molds on the wheel and comprising a valve which is opened and closed to control the flow of air to the mold,

said valve assembly including a rotatable cam for moving the valve to open and closed positions,

a starwheel associated with the cam,

and a first actuator mounted at a first position along the path of the wheel for engagement with the starwheel to rotate the cam and open the valve,

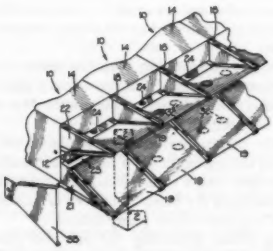
and a second actuator mounted at a second position along the path of the wheel for engagement with the starwheel to rotate the cam and close the valve.

4,523,905

BURNER FOR GASEOUS FUELS

David Lewis, Birmingham, England, assignor to Nu-Way Energy Limited, England

Filed Jul. 21, 1983, Ser. No. 516,702
Int. Cl.³ F23D *15/00*
U.S. Cl. 431—351 **3 Claims**



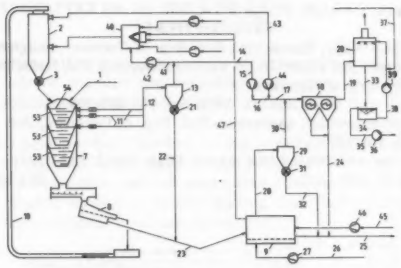
1. A burner for gaseous fuels, comprising a burner body for delivering a fuel gas to a combustion zone which is, in part, defined between two flame-confining walls on respective opposite sides of said zone, the cross-section of said combustion zone, transversely of the direction of gas flow therethrough, being elongate, each said wall being divided in the elongate direction thereof into a plurality of separate wall elements whose adjacent edges are free to move relatively so as to permit thermal expansion of said elements in said elongate direction, and a plurality of brackets supporting said elements, each said bracket being secured to said body and extending therefrom in said direction of gas flow, each said bracket including a pair of slots on respective opposite sides thereof, said adjacent edges of said elements being slidably received in the respective slots so as to prevent a significant gasflow between said adjacent edges, said wall elements being rigidly secured to said burner body only at locations on said elements which are upstream of said combustion zone.

4,523,906

DEVICE FOR DRYING GYPSUM

Vladan Petrovic, Essen, Fed. Rep. of Germany, assignor to Krupp-Koppers GmbH, Essen, Fed. Rep. of Germany

Filed Dec. 6, 1982, Ser. No. 447,628
Claims priority, application Fed. Rep. of Germany, Dec. 23, 1981, 3151045
Int. Cl.³ F27B *15/00*; C04B *11/02*
U.S. Cl. 432—197 **6 Claims**



1. A device for drying cold, wet gypsum, comprising a heater; means for feeding a plurality of heat-retaining solid particles into said heater; means for storing gypsum to be dried; a moving-layer-type drier in the form of an upright stationary container having an inlet at its top, an outlet at its bottom and a plurality of superposed funnel-like means arranged between the inlet and the outlet; means for conveying an amount of hot solid particles from said heater and an amount of gypsum from said storing means into the inlet of said drier; and separating discharging device connected to the outlet of the drier to separate the dried gypsum from the solid particles.

4,523,907

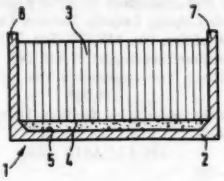
HOLDER AND METHOD OF FIRING CERAMIC BRIQUETTES

Andreas Hässler, Jahnstrasse 46, D-7904 Erbach, Fed. Rep. of Germany

PCT No. PCT/DE82/00050, § 371 Date Sep. 28, 1982, § 102(e) Date Sep. 28, 1982, PCT Pub. No. WO82/03118, PCT Pub. Date Sep. 16, 1982
PCT Filed Mar. 10, 1982, Ser. No. 433,138
Claims priority, application Fed. Rep. of Germany, Mar. 11, 1981, 3109146; Jan. 29, 1982, 3202909; Feb. 8, 1982, 3204233
Int. Cl.³ F27D *5/00*; F23D *3/40*
U.S. Cl. 432—258 **8 Claims**

1. A holder for firing ceramic briquettes, in particular clay tiles, the holder having a floor, at least one separator piece

extending upwards from said floor for permitting a plurality of such holders to be stacked upon one another when the briquettes in such holders are being fired, means for supporting a



plurality of briquettes in said holder in spaced relation to the holder floor, and a quantity of solid fuel situated in the space between the holder floor and the said briquettes for generating the heat required to effect the firing of said briquettes.

4,523,908

DEVICE FOR POSITIONING AND PROTECTING AN ORTHODONTIC BRACKET

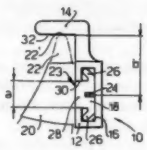
Giovanni Drisaldi, Via Valletta Fogliano, 1; Eugenio Fontana, Via S. Giovanni 89/14, both of I - 27029 Vigevano; Virgilio Manetti, Via Filagno, 14, I - 24047 Treviglio; Franco Segù , Corso Cavour, 34, I - 27029 Vigevano; Sandro Segù , Corso Cavour, 102, I - 27029 Vigevano, and Bruno Segù , Via Trilussa, 22, I - 27029 Vigevano, all of Italy

Continuation of Ser. No. 529,984, Sep. 8, 1983, abandoned, which is a continuation of Ser. No. 339,161, Jan. 13, 1982, abandoned, which is a continuation of Ser. No. 193,007, Oct. 2, 1980, abandoned. This application Jun. 25, 1984, Ser. No. 625,174

Claims priority, application Italy, Dec. 7, 1979, 27918 A/79

Int. Cl.³ A61C *7/00*

U.S. Cl. 433—8 **1 Claim**



1. A one-piece disposable plastic device for applying, to a tooth, an orthodontic bracket provided with at least one slot for receiving an orthodontic wire for orthodontic use, comprising a positioning portion in the form of a small round rod at one end of said device having a rounded positioning surface on one side thereof that bears directly on the incisal edge or top of a tooth and having an opposite surface on the other side thereof that is an extreme end surface of said device, and located at a predetermined distance relative to the axis of said slot, and at the other end of said device a shell portion for covering said slot, said shell portion having a flat upright surface against which said slot opens, said two portions being integral with each other and having a total length less than the exposed height of a tooth, said shell portion having a housing of sufficient size to receive the element or elements of the bracket provided with slot, and the hooks for the fastening of the orthodontic wire, said shell having an aperture for the passage of the neck joining said bracket to the tooth or to the band, said aperture being of such size as to accurately accommodate said neck with slight force fitting about said neck and with the surfaces of the shell and neck that are next to the tooth substantially flush with each other.

4,523,909

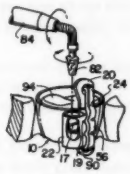
PLASTIC DENTAL MATRIX AND METHOD OF MANUFACTURING SAME

Harry J. Lazarus, 36 Knox La., Englishtown, N.J. 07726

Filed Mar. 6, 1984, Ser. No. 586,569

Int. Cl.³ A61C *5/04*

U.S. Cl. 433—39 **33 Claims**



1. A dental matrix for engaging around a tooth, comprising:

a plastic blanked sheet member having a straight windable portion carrying a first tail end of said sheet member, an intermediate portion carrying a curved tooth engaging portion carrying a second head end of said sheet member;

said straight windable portion being wound into a cylindrical coil and being heat treated to retain an inside diameter and an outside diameter for said coil, said first end being disposed in a core of said coil;

said curved tooth engaging portion having receiving means at said second head end;

locking means engaged with said receiving means and with said intermediate portion of said sheet member between said coil and said second end to form said curved tooth engaging portion into a tooth engaging band, said locking means permitting a slidable withdrawal of said intermediate portion through said locking means with a winding of said coil with a dentist's matrix coil winder tool for tightening said band around a tooth by winding of said coil against said locking means, which locks the matrix on the tooth; and

winder engaging means at said first tail end for engaging a matrix coil winder tool for winding said coil.

4,523,910

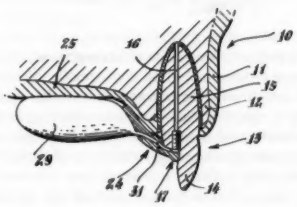
METHOD AND APPARATUS FOR INJECTING MEDICATION INTO A BODY THROUGH A TOOTH

Joseph J. Makovich, 67 Old Ridgefield Rd., Wilton, Conn. 06897

Filed Jan. 31, 1983, Ser. No. 462,677

Int. Cl.³ A61C *17/02*

U.S. Cl. 433—80 **7 Claims**



1. Apparatus for introducing medicinal fluid into the blood stream of a living body that has a tooth with an unobstructed root canal passing from the tooth crown to the end of the root comprising:

fluid input means adapted to be secured to the crown portion of a tooth in communication with an unobstructed root canal passing to the end of the root in communication with the living body tissue;

said fluid input means including a flexible reservoir means adapted to contain medicinal fluid;

said fluid input means being further adapted to be located entirely within the body mouth in back of the tooth line; and

said fluid input means being selectively operable when in position in back of the tooth line to introduce fluid from the reservoir through the root canal and into the living body tissue.

4,523,911

FOOT-ACTUATED CONTROL ARRANGMENT PARTICULARLY FOR DENTAL ARRANGMENT

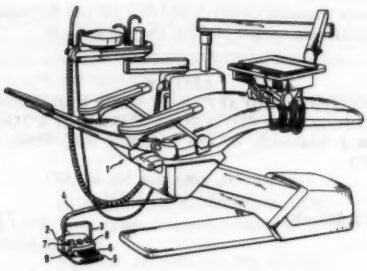
Hartmut Braetsch, Schemmerhofen, and Karl Herter, Warthausen, both of Fed. Rep. of Germany, assignors to Kaltenbach & Voight GmbH & Co., Biberach, Fed. Rep. of Germany

Filed Jan. 17, 1984, Ser. No. 571,507

Claims priority, application Fed. Rep. of Germany, Jan. 26, 1983, 3302558

Int. Cl.³ A61C *1/02*

U.S. Cl. 433—101 **9 Claims**



1. In a foot-actuated control arrangement, in particular for dental apparatuses including foot-treadle means displaceable from an initial position towards both sides in one plane; an actuating element actuatable on a switching and control element wherein said actuating element is displaceable along a pivot path about a bearing location, and at least one control element having a first, active position wherein said control element urges said actuating element to an initial position thereof along the pivot path and automatically reconveys said actuating element into said initial position subsequent to a displacement from said initial position; the improvement comprising: said control element includes a second, inactive position wherein the actuating element moves along its pivot path independent of said control element and may be held in every position along the pivot path; and means connected to the control element to move the control element between its first and second positions.

4,523,912

MINERAL TOOTH WITH SILANE-COUPLED ADHESIVE PLASTIC PART

Alfred Breustedt, Berlin; Heinz Täschner, Radeberg; Rainer Korf, Radeberg, and Renate Lorenz, Radeberg, all of German Democratic Rep., assignors to VEB Kombinat Medizin-und Labortechnik Leipzig, Leipzig, German Democratic Rep.

Continuation of Ser. No. 415,770, Sep. 7, 1982, abandoned, which is a continuation-in-part of Ser. No. 164,757, Jun. 30, 1980, abandoned. This application Mar. 10, 1983, Ser. No. 474,089

Claims priority, application German Democratic Rep., Jun. 29, 1979, 213978

Int. Cl.³ A61K *6/08*

U.S. Cl. 433—202 **19 Claims**

1. A process for producing an artificial tooth which comprises:

(a) providing a base mineral portion;

(b) fritting said base mineral portion at a temperature in the range of between 600° C. and 900° C., to produce a base mineral portion having grain sizes with a fractionation of from about 60 μm to about 100 μm;

(c) applying a silane layer to at least one surface of the base mineral portion, said silane layer being selected from the group consisting of ν-amino-propyltriethoxysilane, ν-glycidyloxypropyltri-methoxysilane, ν-methacryloxy-propyltrimethoxysilane, and ν-aminopropyltrimethoxysilane;

(d) applying a plastic adhesive layer onto said silane layer, said plastic adhesive layer comprising 30% to 33% polymethacrylic acid methyl ester, 3% to 6% dioxane, 63% to 66% methacrylic acid methyl ester, 1% to 2% of a sensitizer, and 0.3% to 1% of a vapor pressure reducing substance; and

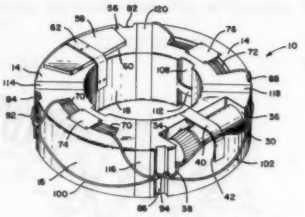
(e) polymerizing said plastic adhesive layer with a quartz lamp radiating heat source using UV-rays for 3 to 6 minutes at a temperature of from 20° C. to 50° C., and under normal atmospheric pressure.

14. An artificial tooth comprising a base mineral portion, said base mineral portion having grain sizes with a fractionation of from about 60 μm to about 100 μm and produced by fritting said base mineral portion at a temperature in the range of between 600° C. and 900° C., a silane layer on at least one surface of said base mineral portion, said silane layer being selected from the group consisting of γ-aminopropyltriethoxysilane, γ-glycidyloxypropyltrimethoxysilane, γ-methacryloxypropyltrimethoxysilane, and γ-aminopropyltrimethoxysilane, and a plastic adhesive layer on said silane layer, said plastic adhesive layer comprising 30% to 33% polymethacrylic acid methylester, 3% to 6% dioxane, 63% to 66% methacrylic acid methylester, 1% to 2% of a sensitizer, and 0.3% to 1% of a vapor pressure reducing substance, said plastic adhesive layer being a polymerized layer produced by polymerization with a quartz lamp radiating heat source using UV-rays for 3 to 6 minutes at a temperature of from 20° C. to 50° C., and under normal atmospheric pressure.

4,523,913
BUOYANT EMERGENCY LIFE SAVING DEVICE

Jon C. Kaino, P.O. Box 857, Ilwaco, Wash. 98624

Continuation-in-part of Ser. No. 393,456, Jun. 29, 1982, abandoned. This application Oct. 25, 1983, Ser. No. 545,152
Int. Cl.³ B63C 9/10, 9/20
U.S. Cl. 441—81 8 Claims



1. Life saving and emergency rescue flotation device to be carried on small vessels, comprising:

(a) an annulus type flotation body having a hollow, hard plastic, shell body with flotation means therein, said flotation body being rectangular in its cross-section and having top and bottom walls and inner and outer side walls, said flotation means consisting of low density, lightweight, buoyant plastic foam material,

(b) said flotation body including on its top surface a generally upwardly opening and uncovered first compartment for containing a removable emergency tethered light means and further including retaining means for holding said light means in said first compartment,

(c) said flotation body further including an open, second compartment for containing survival and emergency signalling gear and the like and which second compartment has removable cover means therefor,

(d) at least one tethering line compartment formed in each of the top and bottom walls and having tethering lines therein secured by at least partial retaining cover means over said tethering line compartments,

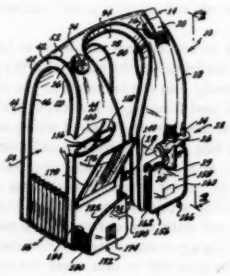
(e) at least two rope tie down means on the outer side wall of said flotation body for gripping if desired and for securing tethering lines and a line for said light means, and

(f) hand grip rope means secured between said rope tie down means.

4,523,914
CONFORMABLE BUOYANCY COMPENSATOR

Mark Faulconer, Costa Mesa, and Allan R. Langton, Santa Ana, both of Calif., assignors to U.S.D. Corp, Santa Ana, Calif.

Filed Jan. 26, 1983, Ser. No. 461,180
Int. Cl.³ B63C 9/16
U.S. Cl. 441—108 7 Claims



7. A buoyancy compensator having the capability of increasing or decreasing relative buoyancy of an underwater diver dependent upon the air therein adaptively formed with a neck portion forming a yoke around a user's neck and a vest portion on either side of one's chest with a rear portion adapted for placement at least in part on each side of a backpack for a diver wherein the improvement comprises:

a frontal bladder portion having at least two communicating chambers divided at least in part by an internal spanning member formed as a portion of the bladder connecting the front and back walls of said bladder to form said plurality of chambers,

means to receive a backpack for diving tanks on the rear portion of said backpack;

covering means overlying said bladder to control the expansion thereof;

a plurality of chambers formed in the rear of said buoyancy compensator bladder freely communicable with said front chambers, wherein said bladder is formed from a plastic material which has been heat set to provide at least in part said spanning member;

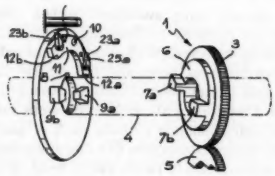
heat set pleats around the shoulder portion thereof; and

said pleats being formed as linear heat set pleats terminating in an expanded heat set area in order to crimp and retain the buoyancy compensator shoulder configuration around said shoulder.

4,523,915
REVERSE WEAVING MECHANISMS

Ulrich Mutschler, Caluire, France, assignor to Staubli-Verdol, Chassieu, France

Filed Jul. 18, 1983, Ser. No. 515,085
Claims priority, application France, Jul. 19, 1982, 82 12849
Int. Cl.³ D03D 49/20
U.S. Cl. 464—3 7 Claims



1. A coupling device for connecting drive from a loom shaft driving the grippers in a weaving loom to a drive shaft for weft selecting means, and for shifting the phase of the drive through a desired angle when the direction of the loom is reversed between its normal forward drive and reverse drive, the coupling device comprising:

(a) a driven disc fixed to said selecting means shaft to rotate the latter therewith and having annularly spaced driven tooth means;

(b) a drive disc disposed axially opposite said driven disc and rotatable with respect thereto and having drive tooth means extending axially toward the driven disc and interengaging with the driven tooth means thereon, the drive tooth means and the driven tooth means being annularly spaced to provide lost-motion angular clearance equaling the desired angle of phase shift when the loom direction is reversed;

(c) means coupled between the loom shaft and the drive disc for driving the latter by the former; and

(d) lock means carried by the driven disc for engaging the tooth means of said drive disc and operative automatically in response to reversal of the direction of rotation of the loom to lock said discs in their respective phase-shifted orientations.

4,523,916
AXIALLY FLEXIBLE DRIVE DISC

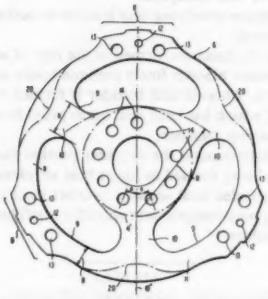
Wolfgang Kizler, Fellbach; Wolfgang Sieder, Waiblingen; Hans-Joachim Schöpf, Stuttgart; Helmut Dobler, Esslingen, and Roland Glück, Ludwigsburg, all of Fed. Rep. of Germany, assignors to Daimler-Benz Aktiengesellschaft, Fed. Rep. of Germany

Filed Jun. 10, 1983, Ser. No. 503,026

Claims priority, application Fed. Rep. of Germany, Jun. 11, 1982, 3222119

Int. Cl.³ F16D *3/06*

U.S. Cl. 464—98 **22 Claims**



1. An axially flexible drive disc made of sheet metal, which is flangedly connected centrally thereof to an end of a drive shaft of a vehicle engine and which is connected radially outwardly at a plurality of fastening points spaced circumferentially substantially evenly to an input element of an adjacent transmission, said drive disc including a plurality of kidney-shaped cutouts corresponding in number to the number of the plurality of fastening points, each of said plurality of kidney-shaped cutouts being associated with a respective fastening point of the plurality of fastening points and disposed in the same area as the respective fastening point radially between the respective fastening point and the central flange connection, each of said kidney-shaped cutouts extending in both circumferential directions with spoke-type webs remaining between adjacent kidney-shaped cutouts, each of said webs extending from said flange connection to a circumferential rim and being at least approximately twice and at most approximately three times as wide as the minimum width of the circumferential rim of the drive disc which extends toward the fastening points, each of said kidney-shaped cutouts being contoured along a radially inner contour generally in the shape of an arc having a radius of curvature from 1.5 to 4 times that of a circumferential circle of the central flange, the inner contour of each of the plurality of kidney shaped cutouts touching the circumferential circle of the central flange at a peripheral position generally coinciding with the intersection of a line passing through the corresponding fastening point and the central axis of the drive disc.

4,523,917
VARIABLE PITCH DIAMETER TORQUE SENSING PULLEY ASSEMBLY

Walter C. Schildt, Elgin, Ill., assignor to Dana Corporation, Toledo, Ohio

Filed Dec. 27, 1983, Ser. No. 565,642

Int. Cl.³ F16H *11/06*

U.S. Cl. 474—19 **8 Claims**

1. A variable pitch diameter torque sensing pulley assembly comprising

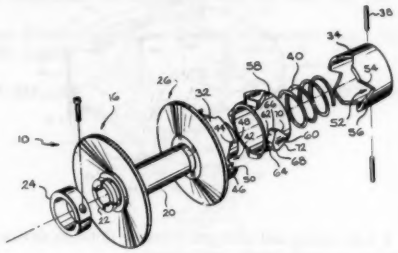
a first pulley half including a hub,

a second pulley half mounted on said hub for axial and rotational movement,

means operatively connected to said pulley halves for biasing them toward each other,

first cam means connected to said first pulley half and having a plurality of first sloped surfaces,

second cam means connected to said second pulley half and having a plurality of second sloped surfaces, the slope of which is different than the slope of said first surfaces,



cam follower means operable with said first or second cam means for biasing said pulley halves toward each other, and

means for limiting relative movement between said cam follower means and only the cam means having surfaces with the least slope.

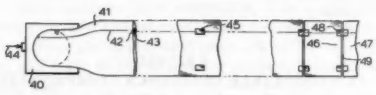
4,523,918
METHOD OF FORMING A BAG CHAIN

Steven Ausnit, New York, N.Y., assignor to Minigrip, Inc., Orangeburg, N.Y.

Filed Nov. 12, 1982, Ser. No. 441,243

Int. Cl.³ B31B *1/90*

U.S. Cl. 493—198 **22 Claims**



1. A method of making a chain of laterally interconnected plastic bags having confronting releasably interlocking rib and groove profile elements on the inner confronting wall surfaces, comprising the steps of:

advancing a continuous length of plastic bag material having interlocked rib and groove profile elements on the inner surface;

applying heat to spaced spot seal areas at bag section intervals along the length of the material at the profile elements to permanently join the elements in the spot seal areas;

applying heat and forming lateral cross seals extending the width of the material and aligned with said spot seal areas to provide side seams for bags at each side of said lateral cross seals; and cutting through the material along substantially the center of said lateral cross seals for separation of the bag sections along the cut except at said spot seal areas and with said cut extending partially into said spot seal areas a predetermined limited distance so that the bags remain attached at said areas for separation with a predetermined force when it is desired to detach the bags from the chain.

4,523,919

PROCESS AND APPARATUS FOR ATTACHING SMALL TEAR-OPEN STRIPS TO PACKAGING MATERIAL OR THE LIKE

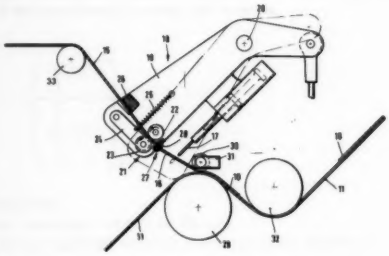
Heinz Focke, Verden, and Hans J. Bretthauer, Bremen, both of Fed. Rep. of Germany, assignors to Focke & Co., Verden, Fed. Rep. of Germany

Filed May 14, 1982, Ser. No. 378,305

Claims priority, application Fed. Rep. of Germany, May 22, 1981, 3120332

Int. Cl.³ B31B *1/90*

U.S. Cl. 493—212 **8 Claims**



1. A method for attaching small, elongate, tear strips (**10**) at predetermined positions on wrapping blanks (**12**) defined on a web (**11**) of packaging material, comprising the steps of:

(a) continuously advancing a web of packaging material through a tear strip application station,

(b) gripping a continuous length of tear strip material (**15**) with clamping means (**21**) shortly behind an extending free end (**16**) thereof,

(c) advancing the clamping means in a first direction towards the application station and attendantly advancing the free end into the application station and into engagement with the web,

(d) pressing the free end against the web at the application station such that the continuous advance of the web pulls the tear strip material with it,

(e) simultaneously with step (d), releasing the clamping means grip on the tear strip material and moving the clamping means in a second direction opposite to the first direction,

(f) severing the tear strip material at a point spaced downstream from the clamping means to provide a new extending free end, and

(g) cyclically repeating steps (b) through (f).

4,523,920

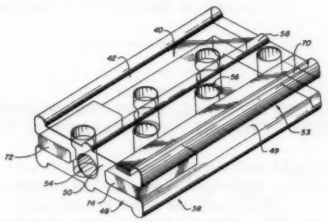
SURGICAL SUCTION DRAIN

Ronald D. Russo, Barrington, R.I., assignor to SIL-FAB Corporation, Hudson, Mass.

Filed Dec. 5, 1983, Ser. No. 557,866

Int. Cl.³ A61M *27/00*

U.S. Cl. 604—93 **7 Claims**



1. A surgical suction drain, comprising:

a first longitudinally extending flange having generally parallel planar external and internal surfaces;

a second spaced apart longitudinally extending flange having generally parallel planar external and internal surfaces;

a longitudinally extending web integrally formed centrally between and abutting the internal surfaces of said first and second flanges defining first and second longitudinally extending and laterally directed exudate receiving channels;

said longitudinally extending web having a longitudinally extending lumen directly connectable to a controlled source of negative pressure; and

said first and second flanges and said longitudinally extending web having a plurality of transversely extending and longitudinally spaced apertures therethrough each of which has open ends in communication with a corresponding one of said external surfaces of said flanges and an internal opening in communication both with a corresponding one of said first and second longitudinally extending and laterally directed exudate receiving channels and with said central lumen.

4,523,921
SURFACE-ACTIVE POLYSILOXANES

Henri Sebag, Paris, and Guy Vanlerberghe, Claye-Souilly, both of France, assignors to L'Oreal, Paris, France

Continuation of Ser. No. 345,097, Feb. 2, 1982, abandoned, which is a division of Ser. No. 98,329, Nov. 27, 1979, Pat. No. 4,342,742. This application Aug. 27, 1984, Ser. No. 644,618
Claims priority, application France, Dec. 5, 1978, 78 34268
Int. Cl.[3] A61K *7/13, 7/06*
U.S. Cl. 8—405 7 Claims

1. In a composition for dyeing hair comprising an aqueous or aqueous-alcoholic carrier, a hair dye and a surfactant, the improvement comprising, as said surfactant at least 0.5×10^{-3} weight percent of at least one of a cyclic or linear polysiloxane, or a mixture thereof, having the formula

wherein

x is an integer from 3 to 10, and

A is a cationic, anionic, zwitterionic or non-ionic hydrophilic unit which contains one or more of the same or different groups selected from the group consisting of amine, amine oxide, ammonium, ammonioalkylcarboxylate, ammonioalkyl-sulphonate, amide, sulphonamide, ether, thioether, sulphoxide, hydroxyl, ester and acid group.

4,523,922
THICKENER MIXTURES, PROCESS FOR THE MANUFACTURING OF TRANSFER PRINTING PAPER SHEETS USING THESE MIXTURES, AND PAPER SHEETS SO OBTAINED

Sienling Ong, Hofheim am Taunus; Ulrich Karsunky, Hünfelden, and Helmut Schmidt, Hofheim am Taunus, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Division of Ser. No. 523,893, Aug. 15, 1983, Pat. No. 4,454,279, which is a continuation of Ser. No. 378,413, May 14, 1982, abandoned. This application Apr. 2, 1984, Ser. No. 595,994
Claims priority, application Fed. Rep. of Germany, May 18, 1981, 3119711
Int. Cl.[3] B41M *5/02;* C09D *7/12;* D06P *5/13;* C08F *5/05*
U.S. Cl. 8—471 4 Claims

1. A method for making a heat transfer printing paper sheet which comprises gravure printing a paper sheet with an aqueous printing ink comprising a heat sublimable disperse dyestuff and a thickener mixture comprising:

(a) a copolymer of vinyl acetate and an unsaturated low molecular weight carboxylic acid selected from the group consisting of at least one of acrylic, crotonic, and maleic acid,

(b) a copolymer of maleic anhydride and ethylene, or a water swellable polyacrylic acid,

(c) a water-soluble, polyhydroxy compound, solid at room temperature, of the formula

$$C_nH_{2n+2-m}(OH)_m$$

in which n is an integer of from 4 to 6 and m is an integer of from 2 to 6, with the proviso that m is smaller than or identical to n,

(d) an organic solvent, water-immiscible at room temperature and completely miscible with organic, water miscible solvents of the formula

$$C_aH_{2a+2-b}[O(CH_2-\underset{\displaystyle CH_3}{\underset{|}{CH}}-O)_{x/b}-H]_b$$

in which a is an integer of from 2 to 6, b is an integer of from 1 to 6, and x is a number of from 8 to 60, with the proviso that b is smaller than or identical to a, and

(e) a water-miscible organic solvent of the formula

$$C_yH_{2y+2-z}(OH)_z$$

in which y and z each are an integer of from 1 to 6 with the proviso that z is smaller than or identical to y.

4,523,923
SOLID DISPERSE DYE FORMULATIONS CONTAINING NON-IONIC DISPERSANTS FOR TRANSFER PRINTING INKS

Urs Büchel, Biel-Benken, Switzerland, and Paul Muther, Basel, both of, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Feb. 16, 1984, Ser. No. 580,908
Claims priority, application Switzerland, Feb. 28, 1983, 1082/83
Int. Cl.[3] C09B *67/38;* D06P *1/16*
U.S. Cl. 8—524 9 Claims

1. A solid disperse dye formulation which does not contain anionic dispersants and which comprises one or more disperse dyes having a particle size of less than 5 μm, and one or more nonionic dispersants selected from the group of the fatty alcohol ethoxylates having a molecular weight in the range from 800 to 2000, of the fatty amine ethoxylates having a molecular weight in the range from 500 to 1000 and of the polyvinylpyrrolidones having a molecular weight in the range from 10,000 to 25,000.

4,523,924
PROCESS FOR THE PREPARATION OF STABLE AQUEOUS SOLUTIONS OF WATER-SOLUBLE REACTIVE DYES BY MEMBRANE SEPARATION

Roger Lacroix, Village-Neuf, France, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Dec. 12, 1983, Ser. No. 560,654
Claims priority, application Switzerland, Dec. 20, 1982, 7430/82; Aug. 5, 1983, 4265/83
Int. Cl.[3] C09B *67/26;* D06P *3/66*
U.S. Cl. 8—527 11 Claims

1. A process for the preparation of a stable aqueous formulation which contains a water-soluble reactive dye, comprising the steps of

(i) treating, under a pressure of 10 to 100 bar, an aqueous solution or suspension of the crude dye with a semipermeable asymmetrical membrane, suitable for reverse osmosis and having a pore diameter of 0.1 to 50 nm, which membrane is modified by polyfunctional compounds containing ionic groups, the basic skeleton consisting of cellulose acetate, polyacrylonitrile or a copolymer of acrylonitrile and ethylenically unsaturated monomer; so as to concentrate the dye solution and at least partially remove salts thereform; and, at the same time, replacing part of the water which is drawn off from the dye solution or suspension with demineralized water so that the total calcium and magnesium ion concentration does not exceed 0.01% by weight and

(ii) further stabilizing the obtained dye solution by addition of a polyphosphate or dihydrogen phosphate/polyphosphate buffer.

4,523,925

PROCESS FOR DYEING OR PRINTING CELLULOSE TEXTILE FIBER MATERIALS WITH REACTIVE DYES CONTAINING FLUORO-TRIAZINE

Peter Scheibli, Bottmingen, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

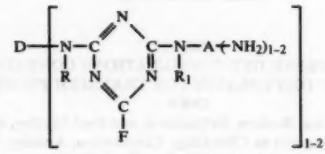
Filed Jun. 3, 1983, Ser. No. 500,742

Claims priority, application Switzerland, Sep. 6, 1982, 3557/82

Int. Cl.³ C09B *62/04*; D06P *3/66, 1/38*

U.S. Cl. 8—549 16 Claims

1. A process for dyeing or printing cellulose-containing textile fiber materials with reactive dyes, which comprises using reactive dyes of the formula



(I)

in which D is the radical of an organic dye, R and R_1 independently of each other are hydrogen or substituted or unsubstituted C_{1-4}-alkyl, and A is a substituted or unsubstituted aliphatic or aromatic radical.

4,523,926

MIXTURES OF DISPERSE DYESTUFFS

Horst Brandt, Odenthal; Günter Gehrke; Rolf Müders, both of Cologne; Hans-Günter Otten, Leverkusen, and Dieter Wiegner, Odenthal, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Aug. 13, 1984, Ser. No. 640,433

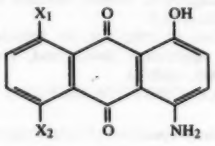
Claims priority, application Fed. Rep. of Germany, Aug. 31, 1983, 3331437; Nov. 25, 1983, 3342691

Int. Cl.³ C09B *67/22*

U.S. Cl. 8—639 8 Claims

1. Dyestuff mixture containing

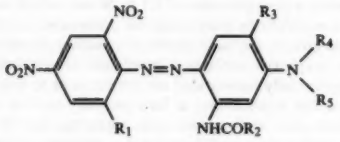
(a) 60–90% by weight of a brominated diaminodihydroxyanthraquinone of the general formula



(I)

wherein X_1 and X_2=OH or NH_2, but $X_1 \neq X_2$, with an average bromine content of 5–35%,

(b) 40–10% by weight of an azo dyestuff of the formula



(II)

wherein

R_1=H, Cl or Br,

R_2=C_1–C_4-alkyl,

R_3=H or C_1–C_4-alkoxy, and

R_4 and R_5=H, C_1–C_4-alkyl, C_3H_5-alkenyl or C_1–C_2-alkoxy-C_2–C_4-alkyl,

and

(c) 0–10% by weight of one or more shading dyestuffs.

4,523,927

METHOD OF COAL UPGRADING

Toshio Kuge; Hiroshi Yokoyama; Shunsuke Nogita, all of Hitachi; Yoichi Nakamura, and Katsumi Muroi, both of Kudamatsu, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jul. 15, 1983, Ser. No. 514,272

Claims priority, application Japan, Jul. 21, 1982, 57-125810

Int. Cl.³ C10L *9/08, 5/32*

U.S. Cl. 44—1 B 10 Claims

1. A method of coal upgrading comprising the steps of:

heat treating low-rank coal at a temperature not exceeding 600° C. to dehydrate the coal, to pyrolyze hydrophilic oxygen-containing groups of the coal and to distill off tar from the coal; and

coating the surface of the coal subjected to said heat treating step with a portion of the tar by contacting tar vapor with the coal while keeping a temperature difference between the coal and the tar vapor in a range from 150° to 300° C.

6. A method of coal upgrading comprising the steps of:

heating low-rank coal at a temperature not exceeding 600° C. to reduce the moisture content of the coal and to obtain tar from the coal through destructive distillation;

cooling the coal reduced in its moisture content to a temperature lower than a heating temperature in said heating step; and

coating the surface of the cooled coal with tar by contacting a portion of the distilled tar in the vapor state with the cooled coal; said coating being conducted with a temperature difference between the cooled coal and the tar vapor being in a range of from 150° to 300° C.

4,523,928

GASOHOL PRODUCTION FROM THERMOCHEMICAL CONVERSION OF BIOMASS TO ETHANOL

Melville E. D. Hillman, Columbus; William J. Huffman, Worthington; Edward S. Lipinsky, Columbus, and Edgel Stambaugh, Worthington, all of Ohio, assignors to Battelle Development Corporation, Columbus, Ohio

Filed Apr. 28, 1980, Ser. No. 144,190

Int. Cl.³ C10L *1/18*

U.S. Cl. 44—56 24 Claims

1. A method for making a liquid fuel-ethanol blend which comprises:

establishing an aqueous reaction mixture of a carbohydrate material, a metal salt, and water in a reaction zone held at elevated temperature of about 150°–300° C. to form an intermediate carbohydrate complex of said metal and/or a metal lactate salt;

pyrolyzing at a temperature of about 275°–400° C. said complex and/or lactate salt in the presence of water in a pyrolysis zone to form ethanol;

recovering said ethanol; and

blending combustible liquid fuel with said ethanol.

4,523,929

ANTIMISTING SYSTEM FOR HYDROCARBON FLUIDS

Ilan Duvdevani, Leonia; John A. Eckert, Mountainside; Donald N. Schulz, Annandale, and Kissho Kitano, Fanwood, all of N.J., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

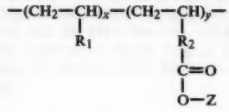
Continuation-in-part of Ser. No. 565,105, Dec. 23, 1983, abandoned. This application Jun. 28, 1984, Ser. No. 625,831

Int. Cl.³ C10L *1/18*

U.S. Cl. 44—62 3 Claims

1. An antimisting hydrocarbon solution comprising a organic liquid mixed with a copolymer of an alpha-olefin and a vinyl alkylenecarboxylic acid, wherein the concentration of said copolymer in said hydrocarbon is about 0.05 to about 2

grams per 100 ml of said solution, wherein such copolymer has the formula:



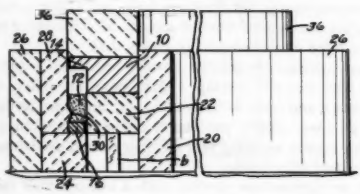
wherein R_1 is an alkyl group having about 1 to about 25 carbon atoms, R_2 is an alkylene group having about 3 to 17 carbon atoms, Z is a mixture of hydrogen and an alkyl group having about 1 to 25 carbon atoms, x is about 95.0 to about 99.99 mole % and y is about 0.01 to about 5 mole %, wherein hydrogen comprises about 1 to about 45 mole% of Z said organic liquid having a solubility parameter of less than 9.5 and being selected from the group consisting of mineral oil, synthetic oil, alkane, cycloalkane and aromatic and mixtures thereof.

4,523,930

METHOD OF MANUFACTURING COMPOSITE GRINDING WHEEL

William H. Williston, Holden, Mass., assignor to Norton Company, Worcester, Mass.

Filed Aug. 6, 1984, Ser. No. 637,947
Int. Cl.³ B24D *3/00*
U.S. Cl. 51—293 **6 Claims**



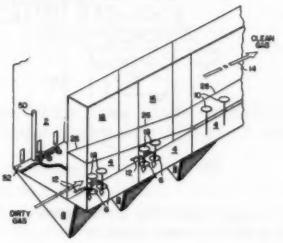
1. The method of making a composite grinding wheel having an annulus forming a support member, the annulus having a groove surrounding its periphery, said groove being defined by side walls and having an inner and outer periphery and being adapted to receive and be bonded to the grinding medium, said annulus including a shoulder around its periphery for defining a floor and one wall of said groove, and said composite wheel including a ring element adapted to be assembled over said shoulder and bonded to said annulus to complete said composite wheel comprising the steps of: supporting said annulus and said ring in spaced apart but concentric relationship; fitting a plurality of mold components together with said spaced apart annulus and ring elements to form a mold cavity that defines the outer periphery of said groove and is concentric with said inner periphery; filling said cavity with unbonded grinding medium; cold pressing said annulus and ring together and compacting said grinding medium while moving said shoulder and said ring elements into a concentric juxtaposed position; and sinter bonding said cold pressed grinding medium; and then stripping said mold components from the assembled bonded grinding medium, shoulder, and ring element that has been bonded to said shoulder.

4,523,931

FABRIC FILTER SYSTEM WITH IMPROVED GAS BYPASS MEANS FOR REMOVING PARTICULATE MATTER FROM GASES

Richard L. Miller, Womelsdorf, and Carlos Estela, Myerstown, both of Pa., assignors to General Electric Environmental Services, Inc., Lebanon, Pa.

Filed Jun. 9, 1983, Ser. No. 502,853
Int. Cl.³ B01D *50/00*
U.S. Cl. 55—80 **22 Claims**



1. A baghouse filter system comprising:

(a) a plurality of filter compartments each having a gas inlet for receiving particulate-laden gas, a gas outlet for delivering filtered gas, fabric filter means between the gas inlet and the gas outlet and means for selectively blocking the gas inlet of each compartment;

(b) a gas inlet manifold mounted internally in the baghouse and connected to a source of particulate-laden gas and to the gas inlet of a plurality of filter compartments;

(c) a gas outlet manifold connected to the gas outlet of a plurality of filter compartments and to a baghouse clean gas outlet, the gas outlet manifold having a common wall with the gas inlet manifold, the gas outlet manifold being mounted internally in the baghouse adjacent the gas inlet manifold; and

(d) at least one poppet damper means in the common wall, thereby providing an internal bypass means for passing particulate-laden gas from the gas inlet manifold to the gas outlet manifold.

4,523,932

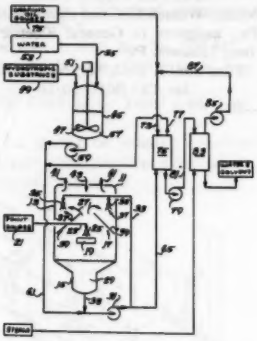
HYDROTROPES AND USES THEREOF

David R. Cosper, Downers Grove, and Gretchen L. McKay, Addison, both of Ill., assignors to Nalco Chemical Company, Oak Brook, Ill.

Continuation of Ser. No. 390,294, Jun. 21, 1982, Pat. No. 4,444,573. This application Jan. 23, 1984, Ser. No. 573,089
The portion of the term of this patent subsequent to May 8, 2001, has been disclaimed.
Int. Cl.³ B01D *47/00*
U.S. Cl. 55—85 **3 Claims**

1. A method for using an aqueous organic hydrotrope solution to remove at least a portion of a hydrocarbon solvent from a stream of air containing the solvent, wherein the method comprises introducing the stream of air containing the solvent into a scrubber containing an effective amount of the aqueous organic hydrotrope solution, and contacting of the stream of air containing the hydrocarbon solvent with the aqueous or-

ganic hydrotrope solution thereby producing a first scrubber product stream containing scrubbed air and a second scrubber



product stream containing the aqueous organic hydrotrope and hydrocarbon solvent solution.

4,523,933

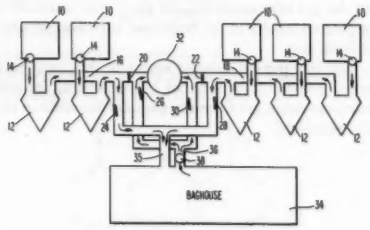
APPARATUS FOR CONVEYING PARTICULATE MATERIAL

Frank I. Laush, Edmonds, and Vernon L. Parker, Everett, both of Wash., assignors to Scott Paper Company, Philadelphia, Pa.

Continuation of Ser. No. 182,682, Aug. 29, 1980, abandoned. This application Sep. 30, 1981, Ser. No. 307,111

Int. Cl.³ B01D *46/00*

U.S. Cl. 55—97 **4 Claims**



1. A system for removing particulate material from a gas stream comprising a chamber having an inlet for receiving the gas stream containing said particulate material and an outlet passage through which the particulate material is adapted to be removed, filter means within the chamber for intercepting the gas stream and collecting the particulate material thereon, vacuum creating means for establishing a pressure drop across the chamber for causing gas flow through the filter means and means for removing the retained particulate material from the filter means and causing it to flow, by gravity, out of the outlet passage of the chamber; characterized in that the system includes a slurry-conveying conduit communicating with the outlet passage; liquid flow control means for only partially filling the conduit with a liquid for conveying the particulate material away from the chamber as a slurry while maintaining an air passage in the conduit that communicates with the outlet passage of the chamber; and vacuum creating means communicating with the air passage in the conduit for establishing a higher vacuum in said air passage than in the chamber whereby liquid vapors are impeded from flowing into the chamber from the slurry-conveying conduit.

4,523,934

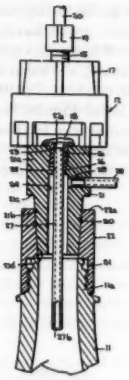
FILTER-DEGASSER

Henry Joshua, 256 Woodward Ave., Staten Island, N.Y. 10314

Filed Mar. 6, 1984, Ser. No. 586,664

Int. Cl.³ B01D *29/00*

U.S. Cl. 55—189 **15 Claims**



1. A solvent filter-degasser adapted to be connected to a solvent bottle and having a filtering portion and a vacuum application portion, with said filtering portion including a filter holder having intake and discharge ports and a filter membrane intersecting the path of flow of solvent between said ports;

wherein the improvement comprises that:

(a) said vacuum application portion comprises a generally tubular member having a first bore extending therethrough and open at both ends, said first bore having

(i) an upper section profiled to define interlocking means for tightly securing said member to said discharge port of said filter holder,

(ii) an intermediate section with a smooth wall surface, and

(iii) a lower section the width of which is greater than the diameter of said intermediate section,

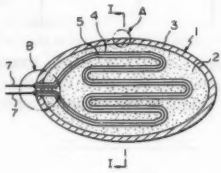
and a tube extending through said first bore and having an outer diameter substantially equal to said diameter of said intermediate section of said first bore, said tube being frictionally and tightly received and retained in said intermediate section of said first bore and having its upper end in direct communication with said discharge port of said filter holder for receiving solvent exiting therefrom, said member further having a second bore therein extending from the outside surface of said member to and communicating with said lower section of said first bore for connecting the region of said lower section of said second bore surrounding said tube to a source of vacuum, and at least the lower part of said member having an outside surface which tapers from a maximum diameter to a minimum diameter at the lower end of said member,

(b) whereby said lower part of said member can be inserted into and withdrawn from the neck of said solvent bottle or an adjunct thereof, and be received therein with a smooth tight fit, without requiring relative rotation between said member and said solvent bottle or adjunct thereof.

4,523,935
ELECTRICAL HEATER RETAINED IN A POROUS CERAMIC STRUCTURE

Shigeru Takagi, and Masahiro Tomita, both of Anjo, Japan, assignors to Nippon Soken, Inc., Nishio, Japan

Filed Jul. 29, 1982, Ser. No. 403,041
Claims priority, application Japan, Aug. 3, 1981, 56-120637
Int. Cl.[3] B01D *39/20*; F01N *3/02*
U.S. Cl. 55—282 6 Claims

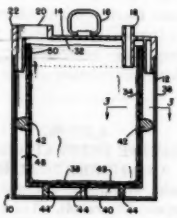


1. A porous ceramic structure having a minute cavity therein, an electrical heater placed in the cavity so as to define a constant space therearound and being retained therein by ceramic adhesive attached to the ceramic structure.

4,523,936
SEPARATION-CHAMBER MEANS

William G. Disanza, Jr., 25 Washington Ave., Hillsdale, N.J. 07642

Filed Jul. 25, 1984, Ser. No. 634,048
Int. Cl.[3] B01D *45/18*
U.S. Cl. 55—429 8 Claims



1. Separation-chamber means, for use in a negative-pressure, collection system, for collecting refuse, such as debris, particulate matter, and the like, comprising:

means defining a chamber in which to collect refuse;

said chamber having an imperforate outer wall and a foraminous inner wall;

said walls being generally concentric defining an annular void therebetween;

a separation-collection area formed within said foraminous inner wall;

means for (a) admitting gas, and refuse suspended in such gas, into said separation-collection area, and for (b) discharging gas from said separation-collection area; wherein

said outer wall has a bottom and an open top;

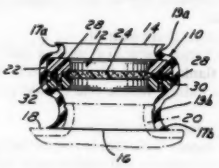
said admitting and discharging means comprises means for admitting gas into said separation-collection area, as aforesaid, through said open top, and means for discharging gas from said separation-collection area, as aforesaid, also through said open top; and

said discharging means comprises port means opening externally of said separation-collection area, and opening internally and commonly, onto both said separation-collection area and said annular void, through said open top.

4,523,937
MODEL ENGINE AIR FILTER

Thomas J. Brubaker, 5775 John R., Troy, Mich. 48098

Filed Sep. 29, 1982, Ser. No. 426,685
Int. Cl.[3] B01D *39/16*, *46/10*
U.S. Cl. 55—509 6 Claims



1. An air cleaner for a miniature internal combustion engine wherein the air cleaner is mounted to the engine air inlet comprising:

a thin, flat filter member,

a tubular elastic boot member open at opposite ends with the boot member having an increased diameter portion intermediate said opposite ends defining an internal groove for receiving the filter member;

said filter member disposed in said groove by stretching one of said ends over said filter member so as to seal said filter member within said groove;

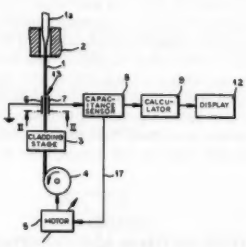
said boot member at opposite ends of the increased diameter portion being radially inwardly necked and terminating in radially outwardly extending peripheral flared flanges at said opposite ends of the boot member; and

said boot member having a longer axial dimension between said groove and the other of said ends than between said groove and said one end, whereby the stretching of said other end over the engine air inlet will not impair the sealing fit of said groove of the boot member about the filter member.

4,523,938
METHOD OF AND APPARATUS FOR CONTINUOUSLY MONITORING DIAMETER VARIATIONS OF AN OPTICAL FIBER BEING DRAWN

Giorgio Grego, Turin, Italy, assignor to Cselt - Centro Studi E Laboratori Telecomunicazioni S.p.A., Turin, Italy

Filed Jul. 2, 1982, Ser. No. 394,535
Claims priority, application Italy, Jul. 6, 1981, 67936 A/81
Int. Cl.[3] C03B *37/02*
U.S. Cl. 65—2 4 Claims



1. A method of minimizing variations in the diameter of an optical fiber being drawn from a preform, comprising the steps of:

(a) passing said fiber between two parallel plates of a constant-charge capacitor, one of said plates being an electret;

(b) continuously comparing the potential of the other of said plates with a reference voltage; and

(c) modifying the fiber-drawing speed in response to differences between said potential and said reference voltage in a sense tending to reduce said differences.

2. In an apparatus for drawing an optical fiber from a preform, including heating means for fusing a preform to be converted into an optical fiber, winding means downstream of said heating means for continuously drawing said fiber from said preform, and variable-speed drive means coupled with said winding means,

the combination therewith of:

a constant-charge capacitor with a pair of parallel plates spacedly flanking said fiber between said heating means and said winding means, one of said plates being an electret;

a source of reference voltage; and

comparison means with inputs respectively connected to the other of said plates and said source for detecting differences between said reference voltage and the potential of said other of said plates, said comparison means having an output circuit connected to said drive means for modifying the speed of said winding means in a sense tending to reduce said differences.

4,523,939

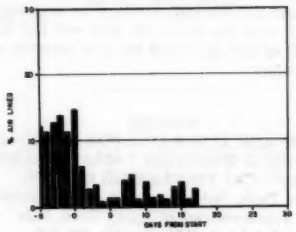
METHOD FOR REDUCING STRIATIONS IN FUSED SILICA

Robert G. Jenkins, Acton, and Dennis B. Shinn, Topsfield, both of Mass., assignors to GTE Products Corporation, Stamford, Conn.

Continuation of Ser. No. 235,829, Feb. 19, 1981, abandoned. This application Jan. 9, 1984, Ser. No. 568,517

Int. Cl.³ C03B *20/00*

U.S. Cl. 65—32 **14 Claims**



1. In a method for forming a fused silica body having reduced striations by feeding silica material into an upper portion of a crucible and heating said material in a first atmosphere of hydrogen and helium to form a silica melt which flows into a lower portion of said crucible to a discharge zone, said crucible being heated by a heating means mounted outside of said crucible in a heating zone which extends adjacent to said crucible, the improvement comprising: supplying said heating zone and said discharge zone with a second atmosphere consisting essentially of hydrogen and at least one noble gas selected from the group consisting of neon, argon, krypton, xenon, and mixtures thereof and drawing said melt from said crucible through said discharge zone and said second atmosphere to form a fused silica body.

4,523,940

SOIL TREATING METHOD AND COMPOSITION FOR CONSERVING NITROGEN IN SOIL

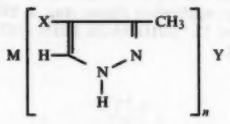
Kim E. Arndt, Pittsburg; Ronald W. McCormick, and Richard B. Rogers, both of Concord, all of Calif., assignors to The Dow Chemical Company, Midland, Mich.

Filed Jun. 25, 1984, Ser. No. 624,422

Int. Cl.³ C05C *13/00*

U.S. Cl. 71—11 **45 Claims**

1. A composition which comprises a reduced nitrogen fertilizer in admixture with from about 0.05 to about 98 percent by weight (based on the amount of reduced nitrogen) of a pyrazole compound-metal complex which corresponds to the formula



wherein M represents cobalt, copper, iron, manganese, nickel, or zinc; Y represents Cl_2, Br_2, $(NO_3)_2$ or SO_4; X represents hydrogen, bromo, chloro or methyl and n represents the integer 2 or 4.

4,523,941

PROCESS FOR THE PARTIAL SOLUBILIZATION OF PHOSPHATE ROCK AND OBTAINING PHOSPHATE FERTILIZERS THEREFROM

Hossam A. A. Abdel-Hehim; Wagner C. Coelho, and Gloria M. G. Soares, all of Rio de Janeiro, Brazil, assignors to Petroleo Brasileiro S.A. - Petrobras, Rio de Janeiro, Brazil

Continuation of Ser. No. 411,134, Aug. 24, 1982, Pat. No. 4,464,504. This application Mar. 26, 1984, Ser. No. 593,169

Claims priority, application Brazil, Aug. 24, 1981, 8105391[U]

Int. Cl.³ E05B *67/32*

U.S. Cl. 71—37 **1 Claim**

1. A process for the partial solubilization of phosphate rock to obtain fertilizer comprising: octacalcium phosphate, diammonium phosphate and calcium sulfate, therefrom comprising: reacting phosphate rock with acid ammonium sulfate in an amount by weight of 0.4 to 0.7 parts of said acid ammonium sulfate to 1 part phosphate rock in the presence of sufficient water to ensure a moisture content of at least 16% and at a temperature of about 50°–130° C. to obtain fertilizer comprising: octacalcium phosphate, diammonium phosphate and calcium sulfate.

4,523,942

4H-3,1-BENZOXAZINE DERIVATIVES, COMPOSITIONS AND HERBICIDAL USE

Gerhard Hamprecht, Weinheim; Juergen Varwig, Heidelberg, and Bruno Wuerzer, Otterstadt, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

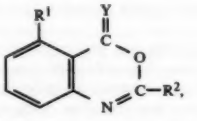
Continuation of Ser. No. 217,560, Dec. 17, 1980, abandoned. This application Jan. 31, 1983, Ser. No. 462,477

Claims priority, application Fed. Rep. of Germany, Jan. 5, 1980, 3000309

Int. Cl.³ A01N *43/86*; C07D *265/20, 265/22*

U.S. Cl. 71—88 **14 Claims**

1. A 4H-3,1-benzoxazine derivative of the formula



(I)

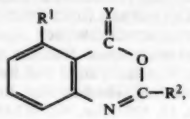
where

R^1 is halogen,

Y is oxygen or sulfur and

R^2 is phenyl which is monosubstituted by haloalkyl of up to 3 carbon atoms.

4. A herbicidal composition comprising a carrier and/or diluent and a herbicidally effective amount of a compound of the formula



(I)

where

R^1 is halogen,

Y is oxygen or sulfur and

R^2 is phenyl which is monosubstituted by haloalkyl of up to 3 carbon atoms.

4,523,943

HERBICIDAL N-(HETEROCYCLIC)-AMINOCARBONYL THIOPHENESULFONAMIDES

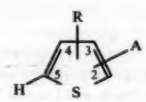
George Levitt, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 255,226, May 4, 1981, Pat. No. 4,398,939, which is a continuation-in-part of Ser. No. 153,279, Jun. 3, 1980, abandoned, which is a continuation-in-part of Ser. No. 27,025, Apr. 4, 1979, abandoned. This application May 4, 1983, Ser. No. 491,528

Int. Cl.³ C07D *409/12;* A01N *46/66*

U.S. Cl. 71—90 **26 Claims**

1. A compound of the formula:



wherein

A is $SO_2N(R_3)C(O)N(R_4)R_5$;

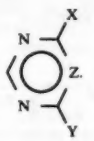
R is C_1–C_4 alkyl, C_3 alkenyl, OCH_3, NO_2, Cl, Br, $SO_2NR_1R_2$ and $SO_2N(OCH_3)CH_3$;

R_1 and R_2 are independently C_1–C_3 alkyl;

R_3 is H or CH_3;

R_4 is H, CH_3 or OCH_3;

R_5 is



X is H, Cl, Br, CH_3, CH_2CH_3, C_1–C_3 alkoxy, CF_3, SCH_3, CH_2OCH_3, $OCH_2CH{=}CH_2$ or $OCH_2C{\equiv}CH$;

Y is CH_3 or OCH_3;

Z is N;

and their agricultural salts; provided that

(a) A cannot be in the 4-position of the thiophene ring; and

(b) one of R_3 or R_4 must be H; and

(c) when A is in the 3-position and R is in the 2-position, then R is other than Cl, Br or CH_3.

19. A composition suitable for controlling the growth of undesired vegetation which comprises an effective amount of a compound of claim 1 and at least one of the following: surfactant, solid or liquid diluent.

4,523,944

N-PHENYLSULFONYL-N′-PYRIMIDINYLUREAS

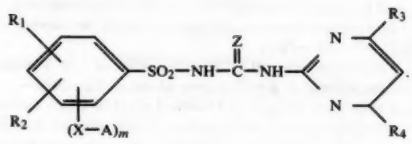
Werner Föry, Basel; Karl Gass, Magden; Willy Meyer, Riehen, and Rolf Schurter, Binningen, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Division of Ser. No. 396,959, Jul. 9, 1982, Pat. No. 4,443,243. This application Jan. 19, 1984, Ser. No. 571,985

Int. Cl.³ C07D *239/42;* A01N *43/54*

U.S. Cl. 71—92 **21 Claims**

1. An N-phenylsulfonyl-N′-pyrimidinyl- or -triazinyl-urea of the general formula I



wherein

A is a C_3–C_6-alkynyl group,

X is oxygen, sulfur or a sulfinyl or sulfonyl bridge,

Z is oxygen or sulfur,

m is the number one or two,

R_1 is hydrogen, halogen, C_1–C_5-alkyl or C_2–C_5-alkenyl or a group —Y—R_5,

R_2 is hydrogen, halogen, C_1–C_5-alkyl, C_2–C_5-alkenyl or C_1–C_4-haloalkyl, or a group —Y—R_5, —$COOR_6$, —NO_2 or —CO—NR_7—R_8,

R_3 and R_4 independently of one another are hydrogen, C_1–C_4-alkyl, C_1–C_4-alkoxy, C_1–C_4-alkylthio, C_1–C_4-haloalkyl, C_1–C_4-haloalkoxy, halogen or alkoxyalkyl having at most 4 carbon atoms,

R_5 and R_6 are each C_1–C_5-alkyl, C_2–C_5-alkenyl or C_2–C_6-alkynyl,

R_7 and R_8 independently of one another are each hydrogen, C_1–C_5-alkyl, C_2–C_5-alkenyl or C_2–C_6-alkynyl, and

Y is oxygen, sulfur or a sulfinyl or sulfonyl bridge; and the salts of these compounds.

4,523,945

2-AMINO-6-(CYCLOPROPYLMETHYL-AMINO)-PYRIMIDINES USEFUL AS HERBICIDES AND MICROBICIDES

Rudolf Mengel; Ludwig Schröder, both of Ingelheim; Werner Stransky, Gau-Algesheim; Gerbert Linden, Ingelheim; Gerhart Schneider, Mühltal, and Sigmund Lust, Darmstadt, all of Fed. Rep. of Germany, assignors to Celamerck, Gesellschaft mit beschränkter Haftung & Co. KG, Ingelheim am Rein, Fed. Rep. of Germany

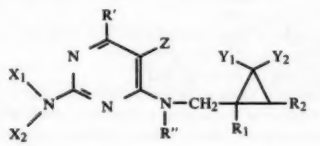
Filed Feb. 14, 1984, Ser. No. 580,079

Claims priority, application Fed. Rep. of Germany, Feb. 18, 1983, 3305524

Int. Cl.³ A01N *43/48;* C07D *239/02;* A61K *31/505*

U.S. Cl. 71—92 **9 Claims**

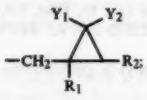
1. A compound of the formula



wherein

R′ is hydrogen, halogen, straight or branched alkyl of 1 to 4 carbon atoms, alkoxy of 1 to 3 carbon atoms, methylthio or di(alkyl of 1 to 6 carbon atoms)amino;

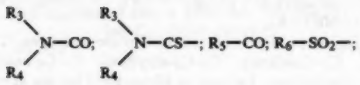
R'' is hydrogen, straight or branched alkyl of 1 to 4 carbon atoms or



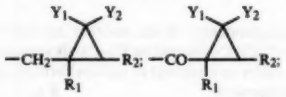
R_1 and R_2 are each hydrogen or straight or branched alkyl of 1 to 4 carbon atoms which may optionally be interrupted by —O— or —N—;

X_1 is hydrogen, straight or branched alkyl of 1 to 6 carbon atoms, alkenyl of 2 to 5 carbon atoms or R_6—SO_2—;

X_2 is hydrogen; straight or branched alkyl of 1 to 6 carbon atoms; alkenyl of 2 to 5 carbon atoms; phenyl; benzyl; mono- or polysubstituted phenyl, where the substituents are one alkyl of 1 to 4 carbon atoms and/or 1 to 3 halogens which may be identical to or different from each other; mono- or polysubstituted benzyl, where the substituents are one alkyl of 1 to 4 carbon atoms and/or 1 to 3 halogens which may be identical to or different from each other;



R_6—SO_2—NH; R_6—SO_2—NH—CO—; R_7—O—CO;



—CH=C(CN)$_2$; or —CH=N—CN; or

X_1 and X_2 together with each other are $(CH_3)_2N$—CH=;

R_3 and R_4 are each hydrogen or straight or branched alkyl of 1 to 4 carbon atoms;

R_5 is hydrogen, straight or branched alkyl of 1 to 6 carbon atoms; mono-, di- or trihalo-substituted methyl; phenyl; or mono- or polysubstituted phenyl, where the substituents are one methyl and/or 1 to 3 halogens which may be identical to or different from each other;

R_6 is straight or branched alkyl of 1 to 6 carbon atoms; trifluoromethyl; phenyl; benzyl; mono- or polysubstituted phenyl, where the substituents are one methyl, alkoxy of 1 to 3 carbon atoms or —$COOR_7$ and/or 1 to 3 halogens which may be identical to or different from each other; or mono- or polysubstituted benzyl, where the substituents are one methyl, alkoxy of 1 to 3 carbon atoms or $COOR_7$ and/or 1 to 3 halogens which may be identical to or different from each other;

R_7 is straight or branched alkyl of 1 to 6 carbon atoms;

Y_1 is hydrogen, chlorine or bromine;

Y_2 is chlorine or bromine; and

Z is hydrogen, halogen or methylthio; or a salt thereof.

7. The method of eradicating undesirable plants which comprises contacting said plants or seeds thereof with an effective herbicidal amount of a compound of claim 1.

8. The method of killing phytopathogenic microorganisms on useful plants, which comprises contacting said microorganisms with an effective microbicidal amount of a compound of claim 1.

4,523,946

SUBSTITUTED 4,5-DIMETHOXYPYRIDAZONES AND THEIR USE FOR CONTROLLING UNDESIRABLE PLANT GROWTH

Adolf Parg, Bad Duerkheim; Bruno Wuerzer, Otterstadt, and Gerhard Hamprecht, Weinheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

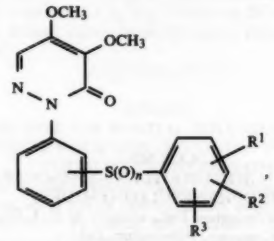
Filed Jan. 13, 1983, Ser. No. 457,655

Claims priority, application Fed. Rep. of Germany, Jan. 28, 1982, 3202678

Int. Cl.³ C07D *237/22*; A01N *43/58*

U.S. Cl. 71—092 **12 Claims**

1. A substituted 4,5-dimethoxypyridazone of the formula



(I)

where R^1, R^2 and R^3 independently of one another are each hydrogen, halogen, nitro, cyano, carboxyl, alkyl of 1 to 4 c-atoms, haloalkyl of 1 to 4 c-atoms, alkoxy of 1 to 4 c-atoms, haloalkoxy of 1 to 4 c-atoms, alkylmercapto of 1 to 4 c-atoms, haloalkylmercapto of 1 to 4 c-atoms, alkylsulfinyl of 1 to 4 c-atoms, or alkylsulfonyl of 1 to 4 c-atoms, and n is 0, 1 or 2, wherein halo and halogen stand for fluorine, chlorine, bromine or iodine.

4,523,947

USE OF TRIAZINE DERIVATIVES FOR PROTECTING MAIZE AND SORGHUM PLANTS

Henry Szczepanski, Wallbach, and Dagmar Berrer, Riehen, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

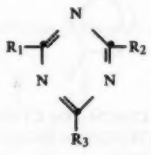
Filed May 29, 1984, Ser. No. 615,021

Claims priority, application Switzerland, Jun. 6, 1983, 3085/83

Int. Cl.³ A01N *43/66*

U.S. Cl. 71—93 **10 Claims**

1. A process for the protection of maize and sorghum plants against the harmful effects of herbicidal chloroacetanilides and chloroacetamides, which process comprises treating these plants, parts of these plants or cultivated areas for these plants with a compound of the formula I



(I)

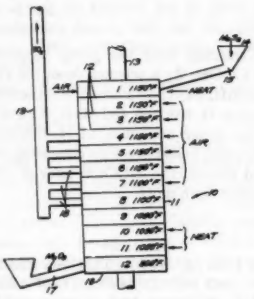
wherein

R_1, R_2 and R_3 independently of one another are each C_1–C_5-alkyl which is unsubstituted or monosubstituted by C_3–C_6-cycloalkyl, or mono- or polysubstituted by halogen, or is C_3–C_6-cycloalkyl which is unsubstituted or mono- or polysubstituted by halogen, or one of the substituents R_1, R_2 and R_3 is also halogen or —NR_4R_5, in which R_4 is hydrogen or C_1–C_5-alkyl and R_5 is hydrogen, C_1–C_5-alkyl, monochloroacetyl or dichloroacetyl, or with a composition containing a compound of the formula I.

4,523,948
ROASTING OF MOLYBDENITE CONCENTRATES CONTAINING FLOTATION OILS

Larry F. McHugh, Fairfield, Conn., and Daniel E. Barchers, Arvada, Colo., assignors to Amax Inc., Greenwich, Conn.

Filed Feb. 14, 1984, Ser. No. 580,042
Int. Cl.[3] C22B 1/06
U.S. Cl. 75—7 5 Claims



1. In a method for treating molybdenum concentrates in a roasting furnace having a first roasting zone and at least a second roasting zone, said concentrate containing residual flotation oil in an amount over 2% by weight which during roasting inhibits the roasting capacity of said furnace and adversely affects the sulfur dioxide concentration of the effluent gas, the improvement which comprises:

deoiling said molybdenite concentrate by heating it to a vaporizing temperature below the temperature at which the oil pyrolyzes,

mixing sulfur with said deoiled concentrate in an amount at least sufficient to provide after roasting an effluent gas containing a minimum of about 2.7% by volume of SO_2,

feeding said heated deoiled concentrate to said first roasting zone,

applying heat to said concentrate in said first roasting zone, including the sensible heat of said concentrate and heat generated by sulfur, sufficient to heat said concentrate to a roasting temperature sufficiently high to initiate a substantially self-sustaining roasting reaction but not exceeding about 1250° F.,

the amount of heat generated by combustion of said sulfur being not substantially in excess of that required to heat the concentrate to said temperature at which self-sustaining roasting reactions are initiated in said first roasting zone,

and continuing the roasting through the first and at least the second roasting zone to effect desulfurization of said deoiled molybdenite concentrate and form molybdenum trioxide.

4,523,949
ALUMINUM DROSS RECLAMATION

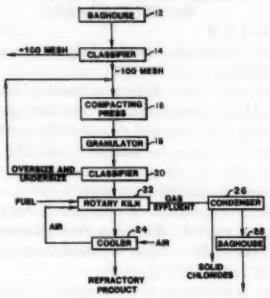
Irving W. Gower, Berwyn; Carl J. Cherry, King of Prussia, and David S. Yang, Berwyn, all of Pa., assignors to Combustion Engineering, Inc., Windsor, Conn.

Filed Sep. 30, 1982, Ser. No. 429,578
Int. Cl.[3] C22B 7/04
U.S. Cl. 75—24 4 Claims

1. A method of treating aluminum dross containing chlorides and combustible volatile material to remove said chlorides and combustible volatile material therefrom and to produce a calcined aluminum oxide refractory material comprising the steps of:

a. agglomerating the aluminum dross in the absence of free water so as to produce dry compacts of said dross;

b. calcining said dry compacts of said aluminum dross in a direct fired rotary kiln wherein said temperature is maintained in excess of 1800° F. whereby said chlorides and combustibles are volatilized and said combustibles are burned and said calcined aluminum oxide refractory material is formed;



c. separating said calcined aluminum oxide refractory material from the products of combustion including said volatilized chlorides;

d. condensing and separating said volatilized chlorides from the remaining products of combustion.

4,523,950
BORON CONTAINING RAPID SOLIDIFICATION ALLOY AND METHOD OF MAKING THE SAME

Chung-Chu Wan, Diamond Bar, Calif.; Rong Y. Wang, Pine Brook, and Deepak Kapoor, Saddle Brook, both of N.J., assignors to Allied Corporation, Morris Township, Morris County, N.J.

Continuation-in-part of Ser. No. 220,618, Dec. 29, 1980,. This application Nov. 9, 1981, Ser. No. 318,893
Int. Cl.[3] F16H 29/10
U.S. Cl. 75—123 B 5 Claims

1. A single-phase, boride-free, homogeneous age hardenable microcrystalline alloy consisting of a composition restricted such that the composition is within a region of a pseudo ternary diagram for the M*-T*-B system,

where M* is the sum of the atomic percents of Ni, Co and Fe; and T* is the sum of the atomic percents of Mo and W, said region of said pseudo ternary diagram being defined by a triangle having its corners at:

(83, 16, 1)

(39, 33, 28), and

(68, 31, 1)

where the indicies are respectively M*, T* and B.

4. A single-phase, boride-free, homogeneous age-hardenable microcrystalline alloy consisting essentially of a composition restricted such that the composition is within a quadrilateral region of the ternary diagram for the Ni-Mo-B system having its corners at:

(83, 16, 1),

(28, 37, 35),

(25, 40, 35), and

(59, 40, 1);

where the indicies are, respectively, the atomic percent of Ni, Mo, and B.

4,523,951
STAINLESS STEEL

Rockne J. Andreini; Audley J. Farmer, and Svetlana Yaguchi, all of King County, Wash., assignors to Earle M. Jorgensen Co., Seattle, Wash.

Continuation of Ser. No. 449,608, Dec. 14, 1982, Pat. No. 4,450,008. This application Nov. 21, 1983, Ser. No. 553,373
Int. Cl.³ C22C *38/04*
U.S. Cl. 75—126 B **13 Claims**

1. A fully austenitic, substantially nonmagnetic stainless steel, comprising:

a stainless steel alloy of Iron including Manganese, Chromium, Molybdenum, Nickel, and Nitrogen to make the steel fully austenitic and substantially nonmagnetic;

0.035% max. Carbon, by weight, in the alloy; and

Columbium in the alloy at a concentration of at least ten times the Carbon concentration;

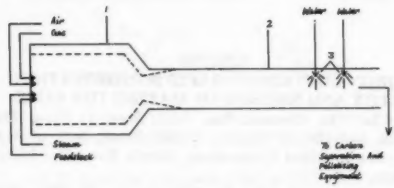
wherein the concentration of Nitrogen is between 0.2–0.5%, by weight, to provide Nitrogen strengthening to the steel through working the steel at a temperature in the range between about 1100°–1400° F., and

wherein the concentration, by weight, of the Manganese is between about 16–20%; of the Chromium is between about 12–15; and of the Nickel is no greater than 2.5%.

4,523,952
MANUFACTURE OF PRINTING INKS

Stephen J. Kovalsky, Indian Head Park, Ill., assignor to Sun Chemical Corporation, New York, N.Y.

Filed Jan. 30, 1984, Ser. No. 575,178
Int. Cl.³ C09D *11/02*
U.S. Cl. 106—20 **12 Claims**



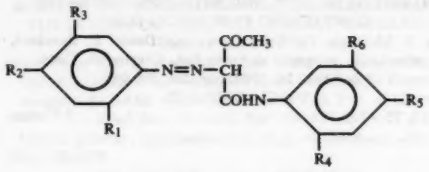
1. A direct process for producing printing inks from a hydrocarbon residue feedstock which comprises the steps of (1) charging the feedstock into a chamber where (a) it is atomized and (b) its decomposition products are reacted with oxygen and heat, (2) discharging the products of step (1) into a mixing device containing a liquid oil ink vehicle and additives, and (3) recovering the product.

4,523,953
PHOTOSTABLE YELLOW COMPOSITE PIGMENTS AND PROCESS FOR THEIR PREPARATION

Camillo Paffoni, Pogno; Filippo M. Carlini; Giorgio Bottaccio, both of Novara, and Alberto Osti, Milan, all of Italy, assignors to Montedison S.p.A., Milan, Italy

Filed Dec. 5, 1983, Ser. No. 558,023
Claims priority, application Italy, Dec. 6, 1982, 24619 A/82
Int. Cl.³ C08L *1/08;* E09D *11/00*
U.S. Cl. 106—23 **16 Claims**

1. Composite ternary organic-inorganic pigments consisting of 70 to 90% by weight of a binary inorganic component of titanium dioxide and aluminum hydrate and, 10% to 30% by weight of an organic co-precipitated component consisting of an organic azoic dye containing in its structure at least one carboxylic (—COOH) and/or sulphonic ($—SO_3H$) acid function, of the formula:



(I)

wherein R_1 is selected from the group consisting of NO_2 $—SO_3H$ and —COOH; R_2 is selected from the group consisting of NO_2, $—SO_3H$, alkyl and alkoxyl; R_3 is selected from the group consisting of H, halogen and alkyl; R_4 and R_5 are each selected from the group consisting of H, halogen, alkyl and alkoxyl; R_6 is selected from the group consisting of H, halogen and alkoxyl, and wherein the —COOH and/or $—SO_3H$ group of dye (I) is salified with metal cations.

4,523,954
PROCESS FOR MANUFACTURING CELLULAR PLASTER AND MOLDED PLASTER ARTICLES

Philippe Pichat, Paris; Michel Niel, Annezin, and Robert Sinn, Lens, all of France, assignors to CDF Chimie, S.A., Paris, France

Continuation-in-part of Ser. No. 283,324, Jul. 15, 1981, abandoned. This application Oct. 12, 1982, Ser. No. 433,767
Claims priority, application France, Jul. 16, 1980, 80 15653
Int. Cl.³ C04B *11/00, 1/00;* C01F *11/46*
U.S. Cl. 106—110 **8 Claims**

1. In a process for producing cellular plaster, comprising mechanically admixing dry plaster with an aqueous foam, said dry plaster being obtained by calcining a neutralized phosphogypsum and having a pH in aqueous suspension of at least about 5, the improvement which comprises incorporating in the admixture of said plaster and said foam about 0.1–5% by weight, relative to the dry plaster, of slaked lime, by adding said slaked lime to said dry plaster prior to admixture with said foam, or by adding said slaked lime separately during said admixing, to increase the bending strength and compressive strength of the resultant cellular plaster for a given plaster density.

4,523,955
HYDROUS CALCIUM SILICATE INSULATION PRODUCTS MANUFACTURED BY RECYCLING GREENWARE

Jerry L. Helser, Hebron, Ohio, assignor to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Division of Ser. No. 944,540, Sep. 21, 1978, Pat. No. 4,477,397. This application May 2, 1984, Ser. No. 606,315
Int. Cl.³ C04B *1/00*
U.S. Cl. 106—120 **2 Claims**

1. A moldable slurry for manufacturing low density hydrated calcium silicate heat insulating bodies comprising an aqueous slurry of reactive calcareous and siliceous materials and particulated greenware, and produced by a process including the steps of:

a. preparing a moldable slurry comprising a water dispersion of reactive calcareous and siliceous containing materials;

b. partially gelling said dispersion by heating at a temperature of approximately 180°–210° F.;

c. molding said partially gelled dispersion and expressing water therefrom thereby forming rigid greenware articles;

d. removing portions of said greenware articles selected for recycling to the process;

e. curing the remaining molded articles by heating and pressurizing; and

f. pulverizing the selected greenware articles from step d to form particulated greenware and adding said particulated

greenware to the composition of step a in a subsequent cycle of the process.

4,523,956

TRANSFER COATING METHODS, COMPOSITIONS AND PRODUCTS

John F. Thurlow, Gorham, Me., assignor to Dennison Manufacturing Company, Framingham, Mass.

Continuation of Ser. No. 817,767, Jul. 21, 1977, abandoned. This application Jun. 3, 1981, Ser. No. 270,170

Int. Cl.³ C08K 3/04; C08L 91/00, 91/06, 91/08

U.S. Cl. 106—243 11 Claims

1. A coating composition comprising a non-soluble aqueous dispersion of:

(1) an inorganic filler material;

(2) carbon black colorant present in the range from about 5% to about 35% of the amount of said filler; and

(3) a wax or wax-like material selected from the group consisting of carnauba, palm, condelilla, esparto, sugar cane, ouricury, montan, ozocerite, paraffin, and microcrystalline waxes, and metallic salts of fatty acids of at least eleven carbon atoms; in which the filler is substituted for a portion of the wax or wax-like material and colorant without impairing the transfer quality of the composition; said wax or wax-like material being in the range from about 10% to about 40% of the amount of said filler.

4,523,957

OPEN-GRADED ASPHALT EMULSION MIXES

Peter E. Graf, Orinda, and Judson E. Goodrich, San Rafael, both of Calif., assignors to Chevron Research Company, San Francisco, Calif.

Division of Ser. No. 178,056, Aug. 14, 1980, Pat. No. 4,423,088, which is a continuation of Ser. No. 22,762, Mar. 22, 1979, abandoned, which is a continuation-in-part of Ser. No. 820,261, Aug. 1, 1977, abandoned, which is a continuation-in-part of Ser. No. 732,849, Oct. 18, 1976, abandoned. This application Sep. 1, 1983, Ser. No. 517,188

Int. Cl.³ C09D 3/24

U.S. Cl. 106—277 14 Claims

1. A paving composition comprising about 80 to 97% by weight of an open-graded aggregate and about 3 to 20% by weight of a cationic bituminous emulsion, said emulsion comprising about 40 to 75% by weight of asphalt, relative to the emulsion, 0.25 to 5.0% by weight relative to the emulsion of a cationic emulsifier, and water as a continuous phase of said emulsion to make up 100% by weight, said composition also containing about 0.01 to 3.0% by weight relative to the emulsion of an ionic polyelectrolyte having an ionic charge opposite to the emulsifier and comprising a salt of a polycarboxylic acid with an average molecular weight of from 1,000 to 10,000,000.

4,523,958

PIGMENT FORMULATIONS AND THEIR USE OF PIGMENTING GRAVURE PRINTING INKS AND FINISHES

Wolf D. Fechner, Dirmstein; Rudolf Polster, Frankenthal; Joachim Kranz, Ludwigshafen, and Eduard Hartmann, Limburgerhof, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Mar. 15, 1983, Ser. No. 475,698

Claims priority, application Fed. Rep. of Germany, Mar. 26, 1982, 3211165

Int. Cl.³ C09B 47/04, 47/08

U.S. Cl. 106—288 Q 10 Claims

1. A formulation containing

(a) a finely divided copper phthalocyanine which is unsubstituted or monosubstituted or disubstituted by chlorine, and

(b) an iron hexacyanoferrate-III pigment, which formulation is obtained by thoroughly milling a mixture of (a) and (b).

4,523,959

PURIFICATION OF SUGARCANE JUICE

Michel Exertier, Orsay, France, assignor to Rhone-Poulenc Industries, Paris, France

Continuation of Ser. No. 294,733, Aug. 20, 1981, abandoned. This application Sep. 27, 1983, Ser. No. 536,224

Claims priority, application France, Sep. 19, 1980, 80 20173

Int. Cl.³ C13D 3/14

U.S. Cl. 127—46.2 13 Claims

1. A process of purifying sugarcane juices, comprising the steps of first contacting the sugarcane juices to be purified with a hydrophobic adsorbent and next with a supported strong anion exchange material, then contacting the juices, in any order, with an anion exchange resin and a cation exchange resin, and finally eluting aconitic acid retained by the anion exchange resin of the then contacting step with a solution of acid pH or a solution of basic pH, thereby obtaining aconitic acid or aconitate, wherein the juices to be purified are obtained by crushing and pressing cane, adding a flocculating agent to the juices obtained, and centrifuging and filtrating the resulting mixture so that it has a concentration of sugars of 10° to 25° Brix, and wherein the hydrophobic adsorbent is selected from the group consisting of a cross-linked vinyl aromatic polymer and a mineral support of alumina or silica coated with an amount of less than 15 mg/m² of a film of cross-linked vinyl aromatic polymer, said adsorbent having a particle size of 50 to 5000 μm, a specific surface of 5 to 600 m²/g, a pore diameter of 60 to 3000 Å, and a pore volume of 0.2 to 4 ml/g.

9. A process for the purification of low-grade sugar solutions comprising the steps of first contacting the low-grade sugar solutions with a hydrophobic adsorbent, next contacting the low-grade sugar solutions with a supported strong anion exchange material, then contacting the low-grade sugar solutions, in any order, with an anion exchange resin and a cation exchange resin, and finally eluting aconitic acid retained by the anion exchange resin of the then contacting step with a solution of acid pH or a solution of basic pH, thereby obtaining aconitic acid or aconitate, wherein the low-grade sugar solution is obtained from sugarcane juice by clarification,, evaporation, crystallization and redissolution, said sugarcane juices being obtained by crushing and pressing cane, adding a flocculating agent to the juices obtained, and centrifuging and filtrating the resulting mixture so that it has a concentration of sugars of 10° to 25° Brix, and wherein the hydrophobic adsorbent is selected from the group consisting of a cross-linked vinyl aromatic polymer and a mineral support of alumina or silica coated with an amount of less than 15 mg/m² of a film of cross-linked vinyl aromatic polymer, said adsorbent having a particle size of 50 to 5000 μm, a specific surface of 5 to 600 m²/g, a pore diameter of 60 to 3000 Å, and a pore volume of 0.2 to 4 ml/g.

4,523,960

METHOD FOR THE PRODUCTION OF HIGH FRUCTOSE CORN SYRUP

Joseph N. A. Otte, Ruisbroek, Belgium, assignor to Dow Chemical, Belgium, S.A., Midland, Mich.

Filed Dec. 9, 1983, Ser. No. 560,040

Claims priority, application European Pat. Off., Dec. 22, 1982, 822016523

Int. Cl.³ C13D 3/14

U.S. Cl. 127—46.2 8 Claims

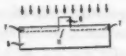
1. An improved method for preparing high fructose corn syrup wherein a glucose-containing process stream is sequentially treated with a strong acid cation-exchange resin and then an anion-exchange resin prior to the enzyme isomerization of at least a portion of the glucose to the fructose, the improvement in said method comprising contacting the glucose-containing process stream with a weak acid resin subsequent to the treatment of the process stream with the strong acid and anion resins but prior to enzyme isomerization.

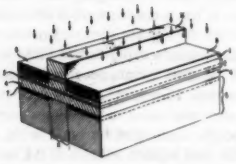
4,523,961

METHOD OF IMPROVING CURRENT CONFINEMENT IN SEMICONDUCTOR LASERS BY INERT ION BOMBARDMENT

Robert L. Hartman, Warren; Louis A. Koszi, Scotch Plains, both of N.J.; Richard S. Williams, Panorama City, Calif., and John L. Zilko, Fanwood, N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Nov. 12, 1982, Ser. No. 441,365
Int. Cl.³ H01L *21/225;* H01S *3/00, 3/06*
U.S. Cl. 148—1.5 **14 Claims**





1. A method for fabricating a III-V compound semiconductor device comprising the following steps:

forming a resistive region within a III-V semiconductor substrate by irradiating said substrate with ions selected from the group consisting of He, Ne, Ar, Xe and Rn; and

growing at least one III-V semiconductor epitaxial layer on said substrate such that a minimum resistivity of the ion implanted region is retained.

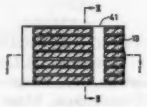
4,523,962

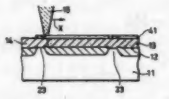
METHOD FOR FABRICATING MONOCRYSTALLINE SEMICONDUCTOR LAYER ON INSULATING LAYER BY LASER CRYSTALLIZATION USING A GRID OF ANTI-REFLECTION COATING DISPOSED ON POLY/AMORPHOUS SEMICONDUCTOR

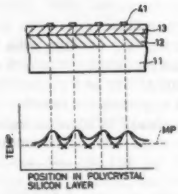
Tadashi Nishimura, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 13, 1983, Ser. No. 561,104
Claims priority, application Japan, Dec. 13, 1982, 57-219961
Int. Cl.³ H01L *21/263;* B05D *3/06*
U.S. Cl. 148—1.5 **3 Claims**

1. In a method for fabricating a monocrystalline semiconductor layer from a polycrystalline or amorphous semiconductor layer formed on a main face of a monocrystalline semiconductor substrate having on said main face a thick insulating layer formed with windows through which said polycrystalline or amorphous semiconductor layer is in contact with said monocrystalline semiconductor substrate, in which the polycrystalline or amorphous semiconductor layer is melted by a scanning thereof with a CW laser beam to monocrystallize said polycrystalline or amorphous semiconductor layer starting from portions of said monocrystalline semiconductor substrate extending through said windows, the monocrystallized semiconductor material having a common crystallographical axis to that of said monocrystalline semiconductor substrate, wherein the improvement comprises the step of: providing a thin antireflection layer of insulating material of silicon nitride on said polycrystalline or amorphous semiconductor layer including a first portion and a second portion, a portion of said polycrystalline or amorphous semiconductor layer above said windows being covered by said first portion of said thin antireflection layer, said second portion of said thin antireflection layer being disposed on remaining portions of said polycrystalline or amorphous semiconductor layer, said second portion having the form of a grid of parallel lines extending from said







first portion in a direction of scanning of said laser beam, the power of said laser beam being constant.

4,523,963

METHOD OF FABRICATING MOS DEVICE ON A SOS WAFER BY STABILIZING INTERFACE REGION WITH SILICON AND OXYGEN IMPLANT

Takao Ohta, Tokyo, and Junichi Ohno, Yokohama, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Feb. 27, 1984, Ser. No. 583,833
Claims priority, application Japan, Mar. 2, 1983, 58-34174
Int. Cl.³ H01L *21/265, 7/00*
U.S. Cl. 148—1.5 **1 Claim**

1. A method of fabricating a MOS device on a SOS wafer by stabilizing an interface region with a silicon and oxygen implant, comprising the steps of:

forming a monocrystalline silicon layer on a sapphire substrate;

ion-implanting silicon and oxygen in a portion of said silicon layer, which is located in the vicinity of said interface between said sapphire substrate and said silicon layer;

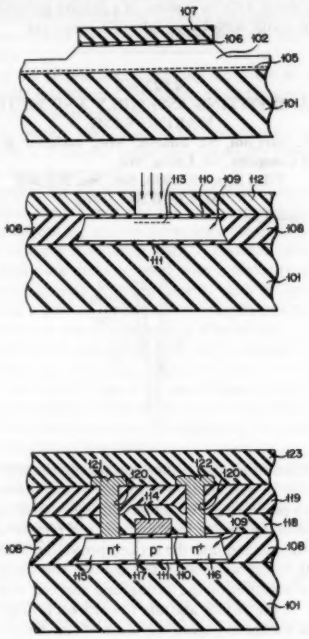
annealing the resultant structure to improve a crystal structure of said portion of said silicon layer in the vicinity of said interface, and forming an insulation layer at said interface;

selectively forming an element isolation region in said silicon layer to obtain an island silicon layer;

forming a gate insulation film on said island silicon layer;

forming a gate electrode on said gate insulation film;

ion-implanting an impurity in said island silicon layer by using said gate electrode as a mask; and



annealing the resultant structure to form source and drain regions in said island silicon layer such that bottoms thereof reach a surface of said insulation layer.

4,523,964

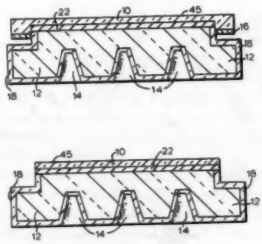
HIGH TEMPERATURE LAYERED SILICON STRUCTURES

L. Bruce Wilner, Palo Alto, and Herbert V. Wong, San Francisco, both of Calif., assignors to Becton, Dickinson and Company, Paramus, N.J.

Division of Ser. No. 233,728, Feb. 12, 1981, Pat. No. 4,400,869. This application Mar. 30, 1983, Ser. No. 480,528

Int. Cl.³ H01L *29/84, 21/225*

U.S. Cl. 148—33.2 **7 Claims**



1. A laminate for use as a high temperature pressure transducer, said laminate comprised of a silicon wafer oriented (100) and having a silicon gauge wafer film rich in boron laminated to one side thereof, said laminate obtained by the steps of

(a) selecting a diaphragm wafer;

(b) selecting a gauge wafer;

(c) depositing in a first depositing step a boron rich layer on one surface of said gauge layer;

the improvement characterized by

(d) depositing in a second depositing step silicon dioxide on one surface of said diaphragm layer;

(e) orienting said diaphragm wafer with said gauge wafer so that said boron rich layer is adjacent said silicon dioxide layer;

(f) subjecting in a first subjecting step said wafers to temperature and pressure conditions sufficient to cause adhesion between said boron rich layer and said silicon dioxide layer;

(g) said first subjecting step is carried out in a press first at a pressure at about two pounds per square inch for a time sufficient to elevate said temperature to an adhesion temperature above the melting temperature of said boron rich layer;

(h) said first subjection step is carried out secondly by maintaining said elevated temperature for six hours at an elevated pressure within the range of between about above two and sixty pounds per square inch;

(i) subjecting in a second subjecting step said oriented wafers to temperature conditions sufficient to simultaneously diffuse said boron rich layer into both said gauge wafer and said silicon dioxide layer on said diaphragm wafer;

(j) removing a substantial portion of said gauge wafer from the surface thereof opposite said diaphragm wafer to provide a boron rich gauge wafer film;

(k) said removing step including preferentially etching said gauge wafer to a uniform thickness; and

(l) said uniform thickness is within the range of between about 5×10^{19} and 1×10^{20} atoms of boron per cubic centimeter of remaining gauge film.

4,523,965

HIGH CARBON STEEL MICROCRACKING CONTROL DURING HARDENING

John R. Lyman, Orono, Me., assignor to Board of Trustees of the University of Maine, Bangor, Me.

Filed Mar. 7, 1983, Ser. No. 472,656

Int. Cl.³ C21D *1/18*

U.S. Cl. 148—143 **18 Claims**

1. A method for hardening high carbon steel comprising:

heating the steel to the full austenitizing temperature of the selected steel composition and maintaining the full austenitizing temperature for sufficient time to dissolve the high carbon content phase into the austenite structure;

quenching the austenitized steel in an intermediate quenching step to a temperature below the martensite start temperature for the selected steel composition but substantially above the final quench temperature and controlling and limiting the time duration of the intermediate quenching to initiate transformation of only a minor portion of the austenite structure to martensite;

tempering the martensite formed by the intermediate quenching step in an intermediate tempering step to a temperature above said intermediate quench temperature thereby halting the intermediate transformation to martensite and imparting toughness to the minor portion of martensite formed during the intermediate quenching step;

quenching the steel in a final quenching step to a final quenching temperature substantially below the intermediate quenching temperature and transforming the major portion of austenite to martensite so that the steel as finally quenched comprises a major portion of untempered martensite intermixed with a minor portion of tough tempered martensite thereby minimizing or avoiding microcracking which may by caused by mutual impingement of untempered martensite crystals.

4,523,966

PROCESS OF PRODUCING SILICON RIBBON WITH P-N JUNCTION

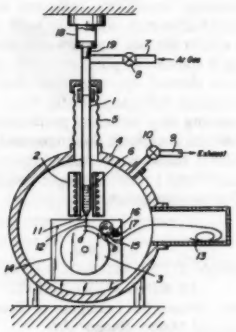
Noboru Tsuya; Kenichi Arai, and Toshio Takeuchi, all of Sendai, Japan, assignors to Tohoku University, Sendai, Japan

Continuation of Ser. No. 346,589, Feb. 8, 1982, abandoned. This application Sep. 13, 1984, Ser. No. 650,569

Claims priority, application Japan, Feb. 9, 1981, 56-16887

Int. Cl.³ H01L *21/208*

U.S. Cl. 148—171 **10 Claims**



1. A process of producing a silicon ribbon with a p-n junction, comprising the steps of melting a raw silicon material having a polarity of the p- or n-type in a heat-resisting tube at a temperature higher than 0.5° C. and lower than 20° C. above the melting point of the raw silicon material, ejecting the melt of raw silicon material onto a rotary cooling substrate, cooling the melt super-rapidly so as to produce a silicon ribbon, and doping an impurity having a polarity of the p- or n-type and whose polarity is opposite to that of the raw silicon material onto the silicon ribbon thus ejected while the silicon ribbon is still at a temperature of 600° C. to 1,000° C. by applying dopant in a gaseous, liquid or paste state, whereby a p-n junction is formed in the silicon ribbon during the course of fully solidifying the silicon ribbon.

4,523,967

INVERT EMULSION EXPLOSIVES CONTAINING A ONE-COMPONENT OIL PHASE

Richard V. Cartwright, Wantage Township, Sussex County, N.J., assignor to Hercules Incorporated, Wilmington, Del.

Filed Aug. 6, 1984, Ser. No. 638,334

Int. Cl.³ C06B *45/02*

U.S. Cl. 149—2 **23 Claims**

1. A blasting composition comprising

(A) an invert water/oil emulsion component consisting essentially of

(a) an internal discontinuous aqueous phase containing about 50–90 weight percent of a water soluble inorganic oxygen supplying salt; and

(b) an effective amount of a continuous hydrophobic organic phase of a partial ester of a 2–12 carbon polyhydric alcohol esterified by a tall oil fatty acid,

(B) a solid oxygen-supplying inorganic salt to obtain an Oxygen Balance of about zero,

(C) 0% to about 50% by volume of a density control agent; and

(D) 0% to about 40% by weight of a sensitizer.

4,523,968

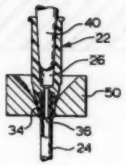
TUBE AND FITTING ASSEMBLY AND METHOD OF MAKING SAME

George W. McCool, St. Joseph, Mo., assignor to Sherwood Medical Company, St. Louis, Mo.

Filed Sep. 19, 1983, Ser. No. 533,908

Int. Cl.³ B29C *27/08*

U.S. Cl. 156—73.5 **20 Claims**



1. A method of making a tube and fitting assembly comprising the steps of providing a formable fitting having an end socket and a pin having a bore therethrough extending concentrically within the socket, inserting one end portion of a plastic tube onto the pin and into the socket, providing a die having a die-forming cavity narrowing toward one end thereof, effecting relative rotation of the fitting and die and relative axial movement of the fitting and die toward each other with the walls of the socket engaging the walls of the die-forming cavity and with the fitting moving in a direction toward the narrow end thereof to inwardly form the walls of the socket against the outer surface of the tube, and separating the fitting with the tube attached thereto from the die.

4,523,969

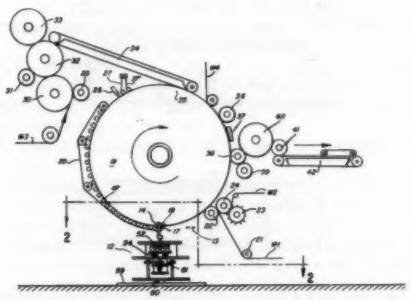
METHOD AND APPARATUS FOR MANUFACTURING A PRODUCT HAVING ELASTIC MEANS DISPOSED IN A DIRECTION TRANSVERSE TO PRODUCT MOVEMENT

Harvey J. Spencer, Green Bay, Wis., assignor to Paper Converting Machine Company, Green Bay, Wis.

Filed Jan. 9, 1984, Ser. No. 569,172

Int. Cl.³ B32B *31/10*

U.S. Cl. 156—161 **15 Claims**



1. A method of applying stretched elastic segments to a web as for a diaper waist-band or the like comprising:

advancing at least one continuous stretched elastic ribbon along a first linear path,

gripping said ribbon at two pairs of points spaced longitudinally in said first path,

severing said ribbon between said pairs of points to provide a stretched ribbon segment between one pair of points and a portion of said continuous ribbon between the other pair of points,

advancing the ribbon segment along a portion of an orbital path while maintaining the length of said segment parallel to said first linear path, and

adhesively uniting said segment to a continuous web being advanced in a second linear path generally perpendicular to said first linear path.

11. Apparatus for applying stretched elastic segments to a web for diaper waist-bands and the like comprising:

means for advancing at least one continuous stretched elastic ribbon along a first linear path, a pedestal adjacent said first linear path and equipped with a plurality of circumferentially spaced gripping means, each gripping means including a pair of spaced apart grippers adapted to grip said ribbon at two points spaced therealong,

means operatively associated with said pedestal for rotating said gripping means to bring said successive gripping means into engagement with said ribbon at spaced points,

a cutting means adjacent said first linear path for cutting said ribbon between said successive gripping means to provide a discreet ribbon segment,

said rotating means being operative to rotate said gripping means on an increasing radius through an arc of about 90° and while maintaining said gripping means in a predetermined orientation to maintain said segment parallel to said first linear path,

means for advancing a continuous web along a linear path generally perpendicular to said first linear path, and

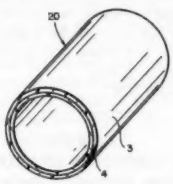
a belt equipped drum in said second path, said belt cooperating with said drum to press said segment against said web.

4,523,970

PROCESS FOR MANUFACTURING SEALANT COATED ARTICLES

Lester T. Toy, Fremont, Calif., assignor to Raychem Corporation, Menlo Park, Calif.

Continuation of Ser. No. 276,111, Jun. 22, 1981, abandoned.
This application Jun. 7, 1983, Ser. No. 500,226
Int. Cl.³ B29D *7/02, 23/04*
U.S. Cl. 156—244.11 **20 Claims**



1. A process for manufacturing a sealant coated dimensionally heat-recoverable laminated sheet comprising the steps of:

selecting a first polymer composition comprising a radiation cross-linkable polymer;

forming a second polymer composition by admixing a thermoplastic component and a rubber component in proportions such that the composition comprises 30 to 95% of the thermoplastic component and 5 to 70% of the rubber component, said second composition being radiation convertible to a sealant composition;

extruding said first and second polymer compositions to form a unitary laminated sheet possessing two layers formed respectively of said first and second polymer compositions and being in a first configuration;

deforming said sheet at a temperature below the crystalline melt temperature of said first composition in to a second configuration; and

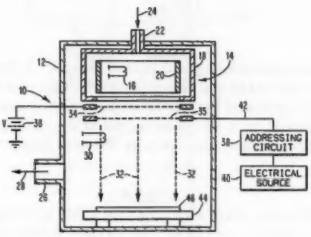
exposing said sheet to a source of ionizing radiation to initiate the formation of chemical bonds between adjacent polymer chains in said first composition, and to induce chemical change in said second composition, thereby converting said second composition from a melt processable composition to a sealant composition and rendering said first composition recoverable towards said first configuration upon subsequent heating.

4,523,971

PROGRAMMABLE ION BEAM PATTERNING SYSTEM

Jerome J. Cuomo, Lincolndale; James M. E. Harper, Yorktown Heights, both of N.Y.; Harold R. Kaufman, Ft. Collins, Colo., and James L. Speidell, Carmel, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 28, 1984, Ser. No. 626,097
Int. Cl.³ B44C *1/22;* **C03C** *15/00, 25/06*
U.S. Cl. 156—345 **18 Claims**



1. An ion beam system for producing a patterned ion beam without the need for masks, comprising:

an ion source for producing ions,

a programmable grid having a plurality of extraction apertures therein through which said ions can selectively be extracted from said ion source to produce said patterned beam,

electrical bias means for electrically biasing individual ones of said extraction apertures for selectively extracting ions from said ion source or preventing the extraction of said ions, thereby producing said ion beam pattern,

means for selectively changing the electrical bias on individual ones of said extraction apertures in order to change said selected ion beam pattern.

4,523,972

METHOD OF AND APPARATUS FOR HANDLING CRYSTAL INGOTS

Robert H. Cushman, Princeton, N.J., and Charles E. Stout, Jr., Emmaus, Pa., assignors to AT&T Technologies, Inc., New York, N.Y.

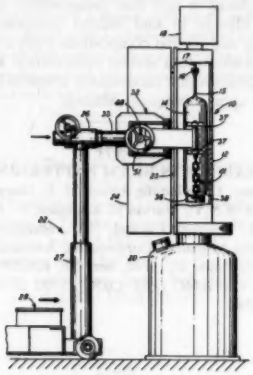
Filed Nov. 28, 1983, Ser. No. 555,781
Int. Cl.³ C30B *15/02*
U.S. Cl. 156—617 SP **21 Claims**

1. Apparatus for handling a crystal ingot comprising:

at least one pair of opposed jaws movably mounted to an end of a cantilever beam so as to move with respect to each other in a first plane, said jaws having inward directed guiding surfaces for contacting opposite sides of a lateral surface of the crystal ingot upon being manipulated into position adjacent to such opposite sides of the lateral surface of the crystal ingot;

a base support positioned and arranged so as to contact a lower end of the crystal ingot in a direction substantially perpendicular to said first plane of movement of the at least one pair of jaws for supporting said crystal ingot in said substantially perpendicular direction;

means for locating said base support relative to and below the jaws, said locating means capable of supporting a substantially vertical force component of the crystal ingot; and



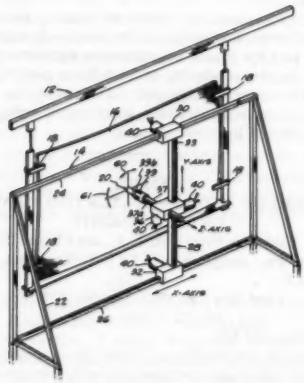
means for manipulating said at least one pair of jaws into positions adjacent to and into contact with opposite sides of such lateral surface of the crystal ingot to firmly support a force component in a direction substantially orthogonal to the force component supported by the base support.

4,523,973

METHOD AND APPARATUS FOR AUTOMATED CHEMICAL MILLING OF COMPOUND CURVED SURFACES

Carl Nelson, Anaheim, Calif., assignor to Aerochem, Inc., Orange, Calif.

Filed Oct. 17, 1983, Ser. No. 542,790
Int. Cl.³ C23F *1/02*; B44C *1/22*; C03C *15/00, 25/06*
U.S. Cl. 156—626 **23 Claims**



1. A method of measuring the wall thickness of a generally planar shaped and a compound curved shaped workpiece at a multiplicity of locations using an ultrasonic sensor carried by a holding device adapted to locate the sensor adjacent the surface of the workpiece and to permit controllable movement of the sensor relative thereto horizontally, vertically and along axes extending perpendicularly from the surface of the part, said sensor being adapted to direct an ultrasonic sound pulse at the workpiece, detect the pulse echos reflected from the first and second surfaces of the work piece and measure the time between said echos whereby the thickness of the work piece can be calculated, said method comprising the steps of:

(a) identifying a multiplicity of horizontally and vertically spaced apart points on the surface of the workpiece;

(b) positioning the sensor proximate one of said points;

(c) moving the sensor along a first transverse axis extending perpendicularly from said point on the surface to a position wherein the sensor is spaced apart from the surface a predetermined distance;

(d) actuating the sensor to determine the wall thickness at said point;

(e) moving the sensor relative to the work piece to a position wherein it is proximate another of said points;

(f) actuating the sensor to determine the wall thickness at said latter point;

(g) successively repeating the movement of the sensor relative to the work piece to a position proximate each of the said multiplicity of points; and

(h) actuating the sensor to determine the wall thickness at each of said multiplicity of points.

4,523,974

METHOD OF FABRICATING A PELLICLE COVER FOR PROJECTION PRINTING SYSTEM

Dawn L. Duly; Henry Windischmann, both of Huntington, and W. D. Buckley, Easton, all of Conn., assignors to The Perkin-Elmer Corporation, Norwalk, Conn.

Division of Ser. No. 466,268, Feb. 14, 1983, Pat. No. 4,465,759. This application Mar. 21, 1984, Ser. No. 592,040
Int. Cl.³ C23F *1/00*; B44C *1/22*; C03C *15/00, 25/06*
U.S. Cl. 156—630 **15 Claims**

1. A method of fabricating a pellicle cover assembly for use in a projection system for forming an image on a radiation sensitive wafer, said method comprising the steps of:

applying a gold film onto the surface of a wafer;

applying a thin uniform polymer film onto the gold film surface of said wafer;

curing said polymer film;

adhering a pellicle support ring to the polymer film;

cutting through the polymer and gold films between the ring and wafer edges to expose the wafer surface;

carefully peeling the ring off the wafer, resulting in a gold coated polymer membrane that is already mounted on a pellicle support ring; and

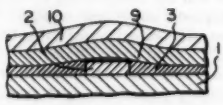
etching off the gold film.

4,523,975

INTEGRATED CIRCUIT PLANARIZING PROCESS

Christopher K. Groves, Bromont, Canada; Kevin Duncan, St. Albans, Vt., and Edward C. D. Darwall, Bromont, Canada, assignors to Mitel Corporation, Ontario, Canada

Filed Apr. 28, 1982, Ser. No. 372,690
Claims priority, application Canada, Apr. 19, 1982, 401226
Int. Cl.³ H01L *21/312*
U.S. Cl. 156—643 **34 Claims**



1. A process for planarizing an integrated circuit comprising:

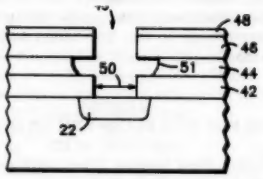
(a) depositing and defining first metal conductors on the surface of an integrated circuit,
(b) depositing a first dielectric layer over the surface of the integrated circuit including said conductors, the dielectric layer being comprised of a material selected from the group consisting of silicon dioxide and silicon nitride,
(c) depositing and polymerizing a layer of negative isoprene resist over the surface of the dielectric layer,
(d) etching the surface of the isoprene and dielectric layers, with an etchant to which the first metal conductors are substantially immune, to a predetermined thickness over the metal conductors, in an atmosphere containing 32 to 50% oxygen in a CF_4 gas in a plasma etcher,
(e) cleaning the etched surface, and
(f) depositing a second dielectric layer over the surface selected fron the group consisting of silicon dioxide and silicon nitride,
whereby a planarized surface having very large radius of curvature steps over the metal conductors is produced.

4,523,976

METHOD FOR FORMING SEMICONDUCTOR DEVICES

Yefim Bukhman, Tempe, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Jul. 2, 1984, Ser. No. 627,264
Int. Cl.³ B44C *1/22;* **C03C** *15/00, 25/06;* **B29C** *17/08*
U.S. Cl. 156—643 **11 Claims**



1. A method for forming an opening through a polyimide layer to expose an underlying surface wherein said opening is characterized by tapered side walls and a predetermined size, said method comprising the steps of: forming a first layer of cured polyimide on said surface; forming a second layer of partially cured polyimide overlying said first layer; forming a masking layer overlying said second layer; forming a pattern in said masking layer to expose portions of said second layer, said pattern including an opening of predetermined size; isotropically etching said second layer exposed through said pattern to expose portions of said first layer; anisotropically etching said first layer exposed through said second layer using said pattern in said masking layer an etch mask to form an opening of said predetermined size in said first layer; removing said masking layer; and curing said second layer.

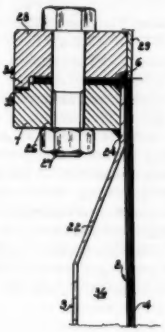
4,523,977

METHOD AND A DEVICE FOR ATTENUATING PRESSURE PULSES THROUGH FLUIDS, IN PARTICULAR FOR CONTINUOUS PAPER WEB PRODUCING MACHINES

Maurizio Cantini, Ascoli Piceno, Italy, assignor to Arnoldo Mondadori Editore S.p.A., Milan, Italy

Filed Aug. 4, 1983, Ser. No. 520,192
Claims priority, application Italy, Sep. 7, 1982, 23144 A/82
Int. Cl.³ D21F *1/06*
U.S. Cl. 162—259 **4 Claims**

1. A pulse attenuating device for a continuous paper web production machine which comprises:
(a) an outer rigid body having a conical central housing; cylindrical rim portions spaced axially from each end of the central housing, the diameter of each of said rim portions being less than the diameter of the corresponding end of the central housing; tapered end portions joining the ends of the central housing to the corresponding rim portions; and ring flanges projecting radially from said cylindrical rim portions;
(b) a resilient inner body extending through said outer rigid body so as to define between said bodies an annular compensating chamber, said inner body comprising a multilayered tubular jacket having a central portion and flared end portions and composed of alternating rubber, woven rayon and polyester fabric layers; and reinforcing means consisting of a plurality of additional layers overlying each end of said central portion and said flared end portions of the tubular jacket, so as to form an integral structure therewith, the outside diameter of the reinforcing means which overlies the end portion of said central portion of said tubular jacket being substantially equal to the inner diameter of the corresponding rim portion;
(c) sealing means for affixing circumferentially the flared end portions of said reinforcing means to the ring flanges



of said outer rigid body and adapted to secure a feed conduit to one end of said pulse attenuating device and an outlet conduit to the other end of said pulse attenuating device, the internal diameter of each conduit being substantially equal to the internal diameter of the corresponding end of the resilient inner body so that, when conduits are connected to the pulse attenuating device, a smooth, uninterrupted passageway is formed from the feed conduit through the pulse attenuating device and into the outlet conduit.

4. The pulse attenuating device of claim 1 further comprising inlet and outlet means for the passage of pressurized fluid to the annular compensating chamber, an electro-pneumatic circuit adapted for sensing the pressure value of the fluid in said compensating chamber and deviation from a preset value, means for controlling the pressure of the pressurized fluid in the compensating chamber so as to create damping differentials for modifying pressure changes occurring in the fluid being conveyed through the paper web production machine.

4,523,978

FORMING SHOE FOR A FORMER IN A PAPER MACHINE

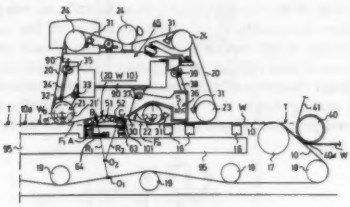
Martti Pullinen, Jyväskylä, Finland, assignor to Valmet Oy, Finland

Filed Apr. 29, 1983, Ser. No. 490,043
Claims priority, application Finland, Apr. 30, 1982, 821531
Int. Cl.³ D21F *1/36*
U.S. Cl. 162—300 **18 Claims**

1. In a two-wire section of a paper making machine comprising an integrated forming shoe mounted at a location and at an attitude and including curved guiding surface means having an active portion, said active portion being that portion of said curved guiding surface means over which a joint run of the

wires and a paper web interposed therebetween is guided over a curved path of travel, said active portion having a length and surface characteristics, and wherein the web is dewatered as it passes over said guiding surface means at least in a direction away from said forming shoe at least in part due to the curved path of travel under the effect of centrifugal forces, the improvement comprising:

said guiding surface means of said integrated forming shoe includes at least two guiding surface means portions arranged in immediate succession in the direction of said path of travel of said joint run, said guiding surface means



portions having different respective radii of curvature, and wherein said active portion of said curved guiding surface means includes a length of at least one of said at least two guiding surface means portions,

means for adjusting at least one of the attitude and location of said integrated forming shoe in its entirety to change said active portion of said curved guiding surface means over which the joint run of the wires and interposed web is guided to selectively provide which of said at least two guiding surface means portions of different radii of curvature and the lengths thereof are included in said active portion.

4,523,979

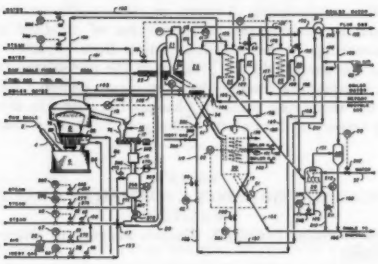
APPARATUS FOR RECOVERY OF RETORTED SHALE FROM AN OIL SHALE RETORTING PROCESS

Roland F. Deering, Brea, and John H. Duir, Yorba Linda, both of Calif., assignors to Union Oil Company of California, Los Angeles, Calif.

Division of Ser. No. 454,836, Dec. 30, 1982, Pat. No. 4,446,001, which is a continuation-in-part of Ser. No. 451,597, Dec. 20, 1982, Pat. No. 4,435,271. This application Jan. 9, 1984, Ser. No. 569,237

Int. Cl.³ C10B *49/00*

U.S. Cl. 202—99 **11 Claims**



1. An apparatus for recovering retorted shale particulates from an oil shale retort comprising, in combination and in fluid communication:

(1) an oil shale retort for retorting particulates of oil shale of at least ¼ inch mean diameter, said retort operating at conditions of elevated pressure;

(2) a first vessel with an entrance opening and exit opening for a moving bed of particulates to pass therethrough, said vessel being further provided with means for introducing a gas thereinto under sufficient pressure to prevent flow of gases from the retort into said first vessel;

(3) means for transporting said retorted shale particulates from said retort into said first vessel through the entrance opening;

(4) means for crushing said particulates to a size less than ¼ inch in diameter;

(5) means for transporting said particulates from said first vessel through the exit opening thereof to said crushing means;

(6) a second vessel provided with an entrance opening and exit opening for said moving bed of particulates, said vessel being further provided with means for introducing a gas thereinto at a rate sufficient to maintain said moving bed in a fluidized condition;

(7) means for transporting said particulates from said crushing means into said second vessel through the entrance opening;

(8) a combustor for combusting combustible materials upon said particulates under fluidized conditions and operating at a pressure lower than that of the retort;

(9) means for transporting said particulates from said second vessel to said combustor, said transporting means comprising means for introducing and transporting a gas at a sufficient rate to carry said particulates in an entrained form; and

(10) means for regulating the rate at which said particulates exit said second vessel through the exit opening thereof while simultaneously reducing the pressure of solids passing therethrough to that prevailing in said transporting means (9).

4,523,980

PROCESS FOR THE RECOVERY OF HIGH PURITY SQUARIC ACID

James J. Barber, West Newton, Mass., assignor to The Halcon SD Group, Inc., New York, N.Y.

Filed Aug. 31, 1984, Ser. No. 645,975

Int. Cl.³ C25C *1/00*

U.S. Cl. 204—59 R **9 Claims**

1. A process for the isolation of substantially pure squaric acid from a squarate salt and complex containing product of the electrolytic cyclization of carbon monoxide, comprising:

contacting the squarate salt and complex containing electrolysis product solid substantially at the same time with

(1) a nonoxidizing aqueous acid, and

(2) an immiscible organic solvent;

separating the formed solid, substantially pure squaric acid from the resulting reaction mixture.

4,523,981

MEANS AND METHOD FOR REDUCING CARBON DIOXIDE TO PROVIDE A PRODUCT

Peter G. P. Ang, and Anthony F. Sammells, both of Naperville, Ill., assignors to Texaco Inc., White Plains, N.Y.

Filed Mar. 27, 1984, Ser. No. 593,984

Int. Cl.³ C25B *3/04*

U.S. Cl. 204—72 **32 Claims**

1. A process for reducing carbon dioxide to at least one useful product comprising the steps of:

a. providing a R_{II}/O_{II} redox coupled electrolyte solution,

b. providing a R_I/O_I redox coupled electrolyte solution,

c. separating the R_{II}/O_{II} solution from the R_I/O_I solution with a first membrane having photosensitizers,

d. providing carbon dioxide,

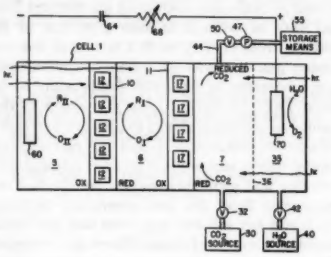
e. separating the carbon dioxide from the R_I/O_I solution with a second membrane having photosensitizers and a catalyst,

f. providing water,

g. separating the water from the carbon dioxide in a manner so that hydrogen ions, but not oxygen, may pass from the

water to participate in the reduction of the carbon dioxide, and

h. illuminating both membranes so as to produce excited photosensitizers to cause electron transfer from the R_{II}.



$/O_{II}$ solution to the R_I/O_I solution thence to the carbon dioxide to cooperate with passed hydrogen ions in the reducing of the carbon dioxide to provide at least one product.

4,523,982

ELECTRON RICH AROMATICS AS CURE PROMOTERS FOR RADIATION CURABLE COMPOSITIONS

George A. Lee, Wayland, Mass., assignor to The Dow Chemical Company, Midland, Mich.

Continuation of Ser. No. 240,706, Mar. 5, 1981, abandoned. This application Mar. 28, 1983, Ser. No. 479,107

The portion of the term of this patent subsequent to Jun. 24, 1997, has been disclaimed.

Int. Cl.³ C08F *2/50*

U.S. Cl. 204—159.15 **20 Claims**

1. A photopolymerizable composition comprising the following components:

(a) an ethylenically polymerizable compound containing at least two ethylenically unsaturated polymerizable groups per molecule;

(b) at least one monovinylidene diluent;

(c) a photoinitiator; and

(d) an electron-rich, aromatic promoter,

said components being present in proportions such that, upon exposure to the appropriate light radiation, the composition cures to form a hard tack-free coating or film which contains less than 1 weight percent of a monovinylidene diluent.

4,523,983

REACTIVE PLASTISOL DISPERSION

Shiow C. Lin, Columbia, Md., assignor to W. R. Grace & Co., New York, N.Y.

Division of Ser. No. 493,035, May 9, 1983, Pat. No. 4,463,128. This application Apr. 30, 1984, Ser. No. 590,458

Int. Cl.³ C08J *3/28*; C08L *29/14*

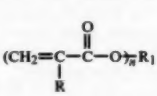
U.S. Cl. 204—159.15 **16 Claims**

1. A reactive plastisol dispersion comprising

(1) a polyvinyl acetal thermoplast in particle form having a particle size in the range from about 0.1 to about 1,500 microns;

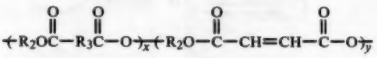
(2) a liquid plasticizer member of the group consisting of

(a) at least one ethylenically unsaturated monomer, oligomer or prepolymer of the formula:



wherein R is H or CH_3, R_1 is an organic moiety and n is 1 or more,

(b) at least one unsaturated polyester containing the group:



wherein R_2 and R_3 are organic moieties, x is 0–20 and y is 1–20; and

(c) a mixture of (a) and (b),

said liquid plasticizer being present in an amount ranging from 50 to 2,000 parts per 100 parts of the thermoplast by weight; and

(3) 0.0005 to 30% by weight of the plasticizer of a photoinitiator.

4,523,984

TREATMENT OF ION-EXCHANGE MEMBRANE

Keith G. Moss; Peter J. Smith, both of Cheshire, and Robin A. Woolhouse, Bunbury Nr. Tarporley, all of England, assignors to Imperial Chemical Industries, PLC, London, England

Filed Jun. 6, 1983, Ser. No. 501,759

Claims priority, application United Kingdom, Jun. 8, 1982, 8216559

Int. Cl.³ C25B *13/00*

U.S. Cl. 204—296 **11 Claims**

1. A method of treating a sheet of an ion-exchange membrane for use in an electrolytic cell comprising at least one anode and at least one cathode, or a precursor for said ion-exchange membrane, in which method the sheet is swollen by contacting the sheet with a liquid medium, characterised in that after swelling the sheet with liquid medium the liquid medium is replaced in the sheet by contacting the thus swollen sheet with an electrolyte to be electrolysed, in that the sheet is swollen by the liquid medium at or near a first face, which in the electrolytic cell faces the anode, to an extent greater than the sheet is swollen by the liquid medium at or near a second face, which in the electrolytic cell faces the cathode, and in that the extent of swelling at or near said first face is greater than the extent of swelling which would be effected by contacting the sheet with the electrolyte to be electrolysed.

4,523,985

WAFER PROCESSING MACHINE

Jack A. Dimock, Santa Barbara, Calif., assignor to Sputtered Films, Inc., Santa Barbara, Calif.

Filed Dec. 22, 1983, Ser. No. 564,748

Int. Cl.³ C23C *15/00*

U.S. Cl. 204—298 **12 Claims**

1. In a wafer processing machine for processing wafers of the type wherein wafers, in a wafer carrier open on the top and bottom and having slots in the side walls for holding the wafers, are transported to or from the wafer carrier relative to a wafer process station:

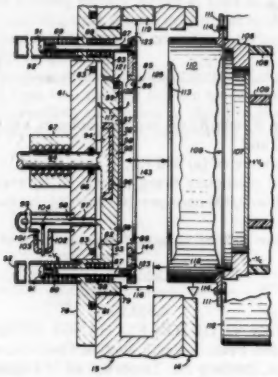
wafer pickup blade means passing transversely through the wafer carrier from the bottom for engagement with the wafers for transport of the wafers relative to the wafer process station;

wafer carrier transport means for sequentially moving the wafer carrier relative to said pick up blade means so as to serially move respective wafers relative to the wafer process station;

indexing means operatively associated with said wafer carrier transport means for indexing the position of said wafer carrier relative to said wafer pickup blade means and having a linear array of radiant energy indicia indicative of the position of said wafers within the wafer carrier;

radiant energy readout means operatively associated with said linear array of radiant energy indicia for giving an output when a respective one of said radiant energy indi-

cia is in registration relative to said readout means, whereby the position of the wafers in the wafer carrier



relative to the position of said wafer pickup blade means is determined in use.

4,523,986

LIQUEFACTION OF COAL

Frederick B. Seufert, Bedford Hills, N.Y., assignor to Texaco Development Corporation, White Plains, N.Y.

Filed Dec. 16, 1983, Ser. No. 562,345
Int. Cl.³ C10G *1/06, 1/00*
U.S. Cl. 208—10 **25 Claims**

1. A process for the liquefaction of ground coal or similar liquefiable carbonaceous solids which comprises:

(1) reacting a preheated slurry mixture comprising dried ground coal or similar liquefiable carbonaceous solids and liquid hydrocarbon slurry oil from (2) (IV), and at least a portion of the hydrogen-rich gas from (4) while in contact with a hydrogenation catalyst in a liquefaction zone at a temperature in the range of about 700° to 950° F., a pressure in the range of about 0 to 300 atmospheres, and a residence time in the range of about 2 to 75 minutes;

(2) separating the effluent stream from the liquefaction zone in (1) into at least the following separate streams by the steps of:

(I) introducing the effluent stream from the liquefaction zone in (1) into a separation zone and separating said effluent stream into the stream of hydrogen-containing gas mixture and a stream of liquid hydrocarbon;

(II) separating a portion of hydrogen-rich gas from said hydrogen-containing gas mixture from (I) to produce a recycle stream of hydrogen-rich gas, and introducing the remainder of the hydrogen-containing gas mixture into the partial oxidation gas generating zone in (3) as a portion of the feed;

(III) reducing the pressure on the stream of liquid hydrocarbon from (I) and separating said stream into hydrocarbon vapors and liquid hydrocarbon oil;

(IV) hydrocloning the liquid hydrocarbon oil from (III) to produce a liquid hydrocarbon slurry oil stream and a underflow liquid hydrocarbon oil stream containing particulate matter;

(V) vacuum distilling a preheated liquid hydrocarbon oil stream containing particulate matter from (IV) in a vacuum fractionating zone thereby forming a stream of vacuum bottoms and a stream of vacuum gas oil vapors; and

(VI) fractionating a preheated mixed stream of hydrocarbon vapors from (III) and the vacuum gas oil vapors from (V) thereby forming a vent gas stream of hydrogen-containing gas mixture and at least one stream of liquid hydrocarbon distillate, and introducing said vent gas stream of hydrogen-containing gas mixture into the partial oxidation gas generating zone in (3) as a portion of the feed;

(3) reacting in a partial oxidation gas generating zone the hydrogen-containing gas mixture from (2) (II) less any hydrogen-rich gas separated therefrom, and the vent gas stream of hydrogen-containing gas mixture from (2) (IV), and with or without at least a portion of the vacuum bottoms from (2) (V), with a stream of free-oxygen containing gas, and with or without supplemental temperature moderator, at a reaction temperature in the range of about 1700° to 3000° F. and a pressure in the range of about 1 to 250 atmospheres to produce a stream of hot raw effluent gas comprising H_2 and CO, entrained carbon-containing solids, and with or without ash and slag; and

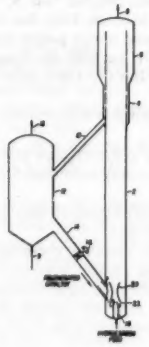
(4) cooling and scrubbing with water the hot raw effluent gas stream from (3), and separating carbon-containing solids and any ash and slag from said gas stream thereby obtaining a stream of clean effluent gas comprising H_2 and CO, and deriving therefrom a stream of hydrogen-rich gas.

4,523,987

FEED MIXING TECHIQUE FOR FLUIDIZED CATALYTIC CRACKING OF HYDROCARBON OIL

Joe E. Penick, Princeton, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Oct. 26, 1984, Ser. No. 665,333
Int. Cl.³ C10G *11/18*
U.S. Cl. 208—157 **4 Claims**



1. In a fluid catalytic cracking process comprising admixing a hydrocarbon oil feed with hot regenerated catalyst in the bottom section of a reactor riser, passing the mixture of the hydrocarbon oil feed and the catalyst through the riser, thereby at least partially volatilizing the oil feed and effecting cracking thereof at the process temperature under endothermic process conditions and deactivating the catalyst by deposition of carbonaceous deposits thereon, separating the deactivated catalyst from the cracked hydrocarbonaceous feed, passing the deactivated catalyst to a regenerator vessel wherein the carbonaceous deposits are removed from the deactivated catalyst under exothermic process conditions by means of a regenerating medium introduced into the regenerator vessel, and passing the regenerated hot catalyst substantially above process cracking temperature to the bottom section of the reactor riser; the improvement comprising

continuously injecting liquid oil feed into a primary mixing zone in a venturi tube mixer spaced inwardly from the reactor riser wall at the bottom portion therein adjacent a regenerated catalyst return conduit;

continuously passing a first portion of the hot regenerated catalyst into the venturi tube mixer sufficient to vaporize

a major amount of oil feed without substantial cracking thereof; and

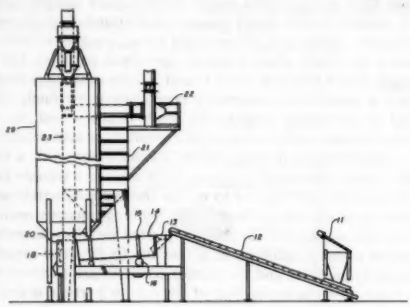
passing a remaining second hot regenerated catalyst portion into the reactor riser through a passage between the venturi tube mixer and reactor riser wall, thereby mixing additional hot catalyst with vaporized oil feed to crack the oil feed in the reactor riser above the venturi tube mixer.

4,523,988

APPARATUS AND METHOD FOR PRODUCING VIRGIN AND/OR RECLAIMING USED ABRASIVES

Harold M. Hedrick, II, Houston, Tex., assignor to Apache Equipment, Inc., Houston, Tex.

Filed Aug. 18, 1983, Ser. No. 524,452
Int. Cl.³ B07B *4/02, 7/02*
U.S. Cl. 209—11 **8 Claims**



1. An apparatus for producing virgin and/or reclaiming used abrasive materials, said apparatus comprising

(a) a pre-scalper for separating materials and debris larger than one inch (1") in diameter from used abrasive material,

(b) a belt conveyor for receiving the separated abrasive material from said pre-scalper, and for transporting same,

(c) a rotary dryer drum, said rotary dryer drum being adapted to receive the separated abrasive material larger than one (1") in diameter from said belt conveyor, and for drying same,

(d) a rotary scalper attached to the end of the rotary dryer drum, said rotary scalper having apertures of appropriate size to permit the entry of abrasive material particles up to three-sixteenths of an inch (3/16") in diameter,

(e) an oversize particle chute appropriately disposed at the end of the rotary dryer drum to aid in discarding particles larger than 3/16" in diameter;

(f) a dust plenum surrounding the rotary scalper, said dust plenum removing all particles smaller than one hundred fifty (150) mesh, with damper to control air,

(g) a baghouse being in communication with said dust plenum through a duct conduit arrangement, said baghouse being itself equipped with a suction motor,

(h) an abrasive particle chute appropriately disposed at the end of said rotary dryer drum for receiving abrasive size particles (3/16" to 150 mesh),

(i) a bucket elevator adopted to receive abrasive size particles from said abrasive particle chute,

(j) a separator connected to said bucket elevator, said separator being adopted to receive abrasive size particles from said bucket elevator and to separate said abrasive particle into particle size ranges, and

(k) air duct from separator to baghouse, with damper to control size separation,

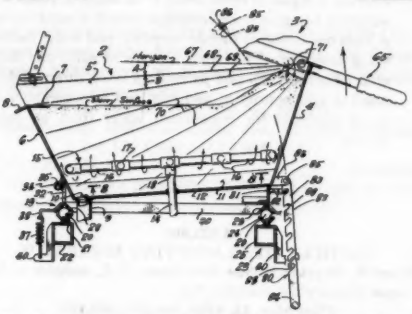
(l) storage bins to receive the reclaimed and separated abrasive particles.

4,523,989

JIG PAN CONCENTRATOR

Ralph G. Graefe, Northridge, Calif., assignor to Keene Engineering, Inc., Northridge, Calif.

Filed Mar. 6, 1984, Ser. No. 586,676
Int. Cl.³ B07B *9/00*
U.S. Cl. 209—44 **8 Claims**



1. In a jig pan concentrator for values occuring in sand, said values having a density greater than that of said sand, wherein said pan is a deep frustum of an inverted right rectangular pyramid having:

an open top in a first reference plane;

a closed bottom in a second reference plane parallel to said first reference plane, spaced therefrom by a selected distance d;

a transverse axis in said first reference plane which transverse axis is horizontal;

a longitudinal axis in said first reference plane, said longitudinal axis being tilted from horizontal by a selected first angle A equal to about 4°;

two sloping side walls oriented parallel to said longitudinal axis and inclined to said first reference plane at a dihedral angle of about 65°;

a sloping back wall oriented parallel to said transverse axis and inclined to said first reference plane at a dihedral angle of about 65°;

a sloping front wall oriented parallel to said transverse axis and inclined to said first reference plane at a dihedral angle of about 65°, wherein the top edge of said front wall is lowered by about one sixth of said selected distance d below said first reference plane to provide a linear, horizontal spillway gate for tailings effluent and to augment the effect of said first angle A of tilt by the amount of a second angle B, said spillway gate extending the full distance between said two sloping side walls;

a carriage frame having a front, a back, said carriage frame pivotally supporting said bottom of said pan proximal to said front wall while disengageably supporting said bottom of said pan proximal to said back wall at an elevation higher than that of said front wall to provide said tilt of said selected first angle A;

a first linear track mounting oriented horizontally parallel to said transverse axis, supporting said front of said carriage frame;

a second linear track mounting oriented horizontally parallel to said transverse axis, supporting said back of said carriage frame;

a base frame supporting said first and second linear track mountings;

driving means mounted on said base frame to provide linear translational motion to said carriage frame along said first and second linear tracks, said driving means consisting of motor means having an adjustable speed of from about 4 rpm to about 1000 rpm driving a rotary shaft, a variable stroke cam on said shaft adjustable to a stroke of from about 0.03" to about 2.0", a connecting rod connecting said cam to said carriage frame;

a valley in said closed bottom of said pan along its centerline parallel to said longitudinal axis, said valley depending from said second reference plane;

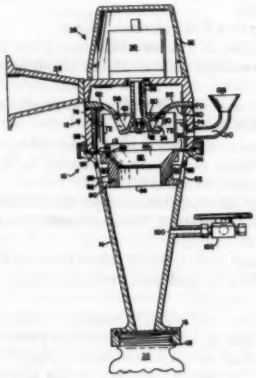
the improvement consisting of providing a flat water manifold in said pan oriented in a plane parallel to said second reference plane, spaced therefrom a selected nominal distance h equal to from about 1" to about 2", said water manifold being an open rectangle which is subdivided by at least one coplanar tubular member, said water manifold being provided with at least one row of uniformly distributed jet orifices, all said jet orifices being directed downward at said bottom of said pan, and inlet means in said water manifold for pressurized water from an outside source.

4,523,990

PARTICULATE CLASSIFYING APPARATUS

Robert W. Duyckinck, New Providence, N.J., assignor to Mikropul Corporation, Summit, N.J.

Filed Mar. 13, 1984, Ser. No. 589,129
Int. Cl.³ B04B 5/12
U.S. Cl. 209—138 **8 Claims**



1. Apparatus for classifying particulate material entrained in a gaseous carrier comprising

a generally cylindrical chamber having a carrier gas outlet at the upper end thereof, and a perimetric cylinder wall,

means for introducing particulate material into said chamber,

a radial flow classifying rotor associated with said carrier gas outlet to selectively reject oversize particulate material from the carrier gas stream passing therethrough,

a tailings delivery chute dependent from the lower end of said chamber,

a nozzle assembly disposed in the upper end of said tailings chute for creating a jet pump induced transport path of carrier gas in the periphery of said chamber and having a restricted axial aperture therein for passage of tailings from said chamber to said chute, said nozzle member further including first means for selectively directing an upwardly moving curtain of carrier gas adjacent to the perimetric cylinder wall of said cylindrical chamber, said curtain serving as a jet pump inducing a transport path and serving as a deaglomerating mechanism,

gas inlet means feeding said carrier gas into the nozzle, and

annular isolating baffle means disposed intermediate said cylinder wall and said classifying rotor to define an annular channel for said upwardly moving curtain of air.

4,523,991

CARRIER PARTICLE FOR THE FROTH FLOTATION OF FINE ORES

Wilfred C. Meyer, and James J. Jakubowski, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Dec. 27, 1982, Ser. No. 453,182
Int. Cl.³ B03D 1/14
U.S. Cl. 209—166 **15 Claims**

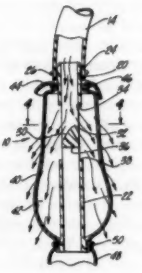
1. A froth flotation process for beneficiating finely sized metal or phosphate particles from a finely sized mineral ore pulp comprising floating the finely sized mineral ore pulp in a frothing aqueous medium comprising a collector for the finely sized metal or phosphate particles, a frother and carrier particles in an effective amount for beneficiating the finely sized metal or phosphate particles by flotation, wherein the carrier particles comprise glass; calcite; magnetite; quartz; taconite; transition metals; transition metal oxides and hydrates thereof; group IIIA metals, metal oxides and hydrates thereof; group IVA metals, oxides, metal oxides and hydrates thereof; metal carbonates; sulfides; or silicates; and are adapted for selectively floating the finely sized metal or phosphate particles, have a particle size of between about 10 and 300 microns and a density which is suitable for selectively beneficiating the finely sized metal or phosphate particles by froth flotation and, have a surface treated with a condensation product, or acid derivative of a condensation product, of an alkanolamine with a fatty acid, a fatty acid ester, a dibasic fatty acid or a tribasic fatty acid in a sufficient amount to render the carrier particle sufficiently hydrophobic to float in the frothing aqueous medium and to act as a carrier for the finely sized metal or phosphate particles under conditions such that the finely sized metal or phosphate particles and the carrier particles are recovered in the froth wherein the surface of the carrier particle is treated with the condensation product prior to contacting the carrier particles with the frothing aqueous medium, with the proviso that the condensation product with which the carrier particle is treated is a different compound than the compound used as the collector for the metal or phosphate.

4,523,992

FILTER ASSEMBLY

James T. Sackett, 27325 Gail, Warren, Mich. 48093

Filed Jun. 1, 1984, Ser. No. 616,241
Int. Cl.³ B01D 25/04, 25/30, 35/02
U.S. Cl. 210—232 **9 Claims**



1. A filter assembly for use with a water discharge hose of a washing machine comprising:

a body having an inlet tubular member and an elongated outlet tubular member, said members being substantially coaxial and axially spaced from each other, each tubular member having an inner end which faces the inner end of the other tubular member, and an outer end,

a plurality of circumferentially spaced fins secured to and extending outwardly from said tubular members,

means for fluidly connecting said outer end of said inlet tubular member to the discharge hose,

a tubular filter element,

means for attaching one end of said filter element to said inlet member and the other end of said filter element adjacent said outer end of said outlet tubular member so that said filter element encloses said fins and so that said inner end of said outlet member is positioned at a midpoint of said filter element, and

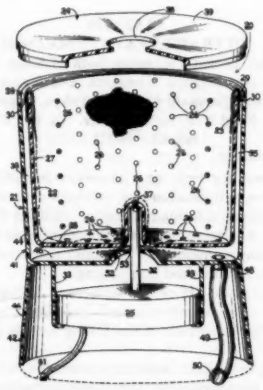
means positioned between said inner ends of tubular members for diverting fluid flow from said outer end towards said inner end of said inlet member radially outwardly around the inner end of said outlet member and toward said filter element.

4,523,993

PRECIOUS METAL RECOVERY APPARATUS

Mark I. Farber, Orange, Conn., assignor to Resource Associates International Corp., West Haven, Conn.

Filed Jun. 27, 1983, Ser. No. 507,974
Int. Cl.³ B01D *33/06*
U.S. Cl. 210—297 **8 Claims**



1. Apparatus for removing particles of precious metal from suspension in an aqueous carrier comprising:

A. a perforate vessel supportingly mounted for rotation about an axis thereof and comprising

1. a substantially cylindrical drum mounted for rotation about the central axis thereof, with the lower end of the drum being closed by a base member and the upper end of the cylinder being open for ease of access, and

2. a plurality of holes formed throughout the cylindrical walls and base member thereof;

B. a housing peripherally surrounding a major portion of the perforate vessel and supportingly maintaining the perforate vessel for rotation therein;

C. filter means comprising

1. a bag-like configuration having a diameter substantially equal to the diameter of the cylindrical vessel and an overall top-to-bottom depth at least substantially equal to the depth of the cylindrical vessel for completely covering in overlying relationship both the walls and the base of said perforate vessel, and being removably positionable in cooperating relationship with the entire inside surfaces of the perforate vessel, and

2. a pore size which prevents the precious metal particles from passing therethrough, while allowing the aqueous carrier to pass therethrough; and

D. drive means

1. supportingly mounted to the housing, and

2. drivingly engaged with the perforate vessel for controlled rotation thereof;

whereby upon rotation of the perforate vessel with a precious metal containing aqueous carrier contained therein, the aqueous carrier is forced through the filter means and the walls of the vessel for disposal, while the precious metal is retained directly within the filter means for recovery.

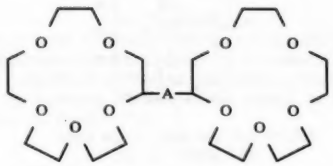
4,523,994

BIS-CROWN-ETHER DERIVATIVES AND THEIR USE

Toshiyuki Shono, Suita; Keiichi Kimura, Osaka, and Takumi Maeda, Nishinomiya, all of Japan, assignors to Shimadzu Corporation, Kyoto, Japan

Filed Jun. 28, 1983, Ser. No. 508,578
Claims priority, application Japan, Jun. 30, 1982, 57-114934
Int. Cl.³ C08J *5/22;* **C08K** *5/15*
U.S. Cl. 210—500.2 **15 Claims**

1. An ion-selective membrane comprising at least one bis-crown-ether derivative of the general formual (I):



(I)

wherein A represents a divalent organic group which may take such a configuration that the two crown rings may easily overlap spatially, holding a monovalent metal ion having an ionic radius of 1.3–2.1 Å between them, like a sandwich.

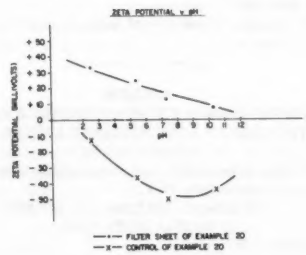
8. An ion-selective membrane of claim 1, wherein the bis-crown-ether derivative is dispersed in a water-insoluble organic polymer as the carrier and is made to form a solid membrane.

4,523,995

CHARGE-MODIFIED MICROFIBER FILTER SHEETS

David B. Pall, Roslyn Estates; Peter J. Degen; Irving B. Joffee, both of Huntington; Warren M. Foss, Glen Cove, and Thomas C. Gsell, Levittown, all of N.Y., assignors to Pall Corporation, Glen Cove, N.Y.

Filed Oct. 19, 1981, Ser. No. 312,723
Int. Cl.³ B01D *13/00*
U.S. Cl. 210—504 **32 Claims**



1. A process for forming a filter sheet exhibiting a positive zeta potential in alkaline media comprising:

(1) mixing inorganic microfibers normally having a negative zeta potential with an aqueous solution of a water soluble, non-colloidal cationic thermo-setting binder resin or polymer to form a microfiber dispersion;

(2) adding a precipitating agent comprising a synthetic, water soluble or dispersible polymer containing anionic groups to said dispersion to precipitate said binder resin or

polymer and coat said microfibers with said binder resin or polymer; and

(3) forming the coated microfibers of step (2) into a filter sheet, said filter sheet exhibiting a positive zeta potential in alkaline media.

4,523,996

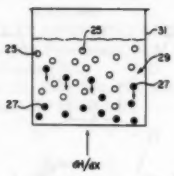
METHOD OF SEPARATING CATIONIC FROM ANIONIC BEADS IN MIXED RESIN BEDS

Robert G. Charles, Allison Park, and William M. Hickam, Pittsburgh, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Feb. 22, 1984, Ser. No. 582,341

Int. Cl.³ B01J *47/06*

U.S. Cl. 210—504 **14 Claims**



1. In a mixed resin bed containing a mixture of ionic resin beads, said mixture comprising an anionic bead component and a cationic bead component, the improvement wherein each of the resin beads of one of said bead components has integrally incorporated therewith a first ferromagnetic material having a first Curie point, and each of the resin beads of the other bead component has integrally incorporated therewith a second ferromagnetic material having a second Curie point different from said first Curie point, so as to render said one bead component magnetically attractive under an applied inhomogeneous magnetic field at a different temperature than said other bead component is rendered magnetically attractive.

4,523,997

AFFINITY CHROMATOGRAPHY MATRIX WITH BUILT-IN REACTION INDICATOR

Laura J. Crane, Long Valley, and Hugh E. Ramsden, Scotch Plains, both of N.J., assignors to J. T. Baker Chemical Company, Phillipsburg, N.J.

Filed Mar. 2, 1984, Ser. No. 585,782

Int. Cl.³ B01D *15/08*

U.S. Cl. 210—635 **6 Claims**

1. The p-nitrophenylester of succinoylaminopropyl silica gel.

4,523,998

CONTINUOUS ION EXCHANGE PROCESS USING THERMALLY REGENERABLE LIQUID ION EXCHANGERS

Bang M. Kim, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Dec. 5, 1983, Ser. No. 557,986

Int. Cl.³ B01D *15/04*

U.S. Cl. 210—638 **13 Claims**

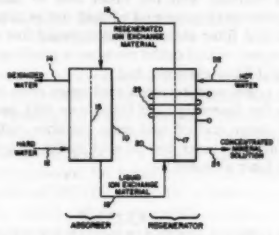
1. A method for continuous removal of mineral ions from an aqueous feed solution, said method comprising:

introducing said feed solution into a first reaction vessel;

introducing a substantially aqueously insoluble mixture of liquid cation exchange material and liquid anion exchange material into said first reaction vessel with said feed solution at a first temperature, whereby said mineral ions become absorbed by said liquid ion exchange material;

introducing said liquid ion exchange material from said first vessel into a second vessel;

introducing an aqueous solution into said second vessel, said solution in said second vessel being controlled to be at a temperature greater than said first temperature, said second temperature being sufficient to permit the dissolving



of said mineral ion species in said aqueous solution in said second vessel; and

removing said aqueous solution containing said dissolved mineral species from said second vessel.

4,523,999

ULTRAFILTRATION METHOD

Seiji Toyoshi; Tetsuo Tanegawa, both of Saga; Masaru Saeki, Fujisawa, and Tetsuya Kawakita, Yokohama, all of Japan, assignors to Ajinomoto Co., Inc., Tokyo, Japan

Filed Dec. 16, 1983, Ser. No. 561,974

Int. Cl.³ B01D *13/00*

U.S. Cl. 210—639 **9 Claims**

1. A method for removing impurities including humic substances, gums, polysaccharides, proteins or a mixture thereof from an amino acid fermented liquor obtained from cane, beet molasses, or a mixture thereof, said amino acid being selected from the group consisting of glutamic acid, lysine and a mixture thereof; said method comprising:

(a) adjusting the pH of the fermented liquor to a value of from 2–5 to precipitate said impurities, said impurities having an isoelectric point falling within a pH range of 2–5;

(b) ultrafiltering said impurities from said fermented liquor using a semipermeable ultrafiltration membrane.

4,524,000

PROCESS FOR THE REMOVAL OF OIL FROM AN OIL-IN-WATER DISPERSION

Eric J. Clayfield; Arnold G. Dixon, and Richard J. L. Miller, all of Chester, United Kingdom, assignors to Shell Oil Company, Houston, Tex.

Filed Feb. 14, 1984, Ser. No. 579,925

Claims priority, application United Kingdom, Feb. 17, 1983, 8304389

Int. Cl.³ B01D *17/02*

U.S. Cl. 210—649 **9 Claims**

1. A process for the separation of two liquids by passing a dispersion of negatively charged droplets of a liquid in an aqueous liquid along the surfaces of a layer of fibers, thus forming coalesced dispersed liquid and, after the aqueous liquid has left the solid material, separating coalesced dispersed liquid from the aqueous liquid, in which process the solid material has been manufactured by contacting fibers of a solid material having active hydrogen atoms in surface groups in the presence of water with a compound of the general formula (I):

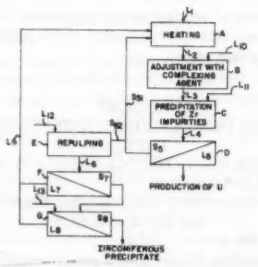
$$R^1—\underset{\displaystyle R^3}{\overset{\displaystyle R^2}{\underset{|}{\overset{|}{Si}}}}—R^4 \qquad (I)$$

in which R^1 represents an aliphatic or cycloaliphatic group which contains at least one substituted or unsubstituted amino group, with the group present between the silicon atom and the first nitrogen atom, seen from the silicon atom, being an alkylene group having in the range of from 1 to 5 carbon atoms, wherein said substituted amino group is substituted with 1 or 2 alkyl groups having 1 to 5 carbon atoms, and R^2, R^3, and R^4 represent hydrolyzable alkoxy, aroxy, or cyclo-alkoxy groups having not more than 6 carbon atoms, and said fibers have an average diameter between about 0.5 and 50 microns and are arranged in a layer having a bulk density between about 25 and 200 grams per liter in a layer having a height between about 0.5 and 15 centimeters.

4,524,001
METHOD OF PURIFYING URANIFEROUS AQUEOUS SOLUTIONS

Philippe Joubert, Lyons, France, assignor to Uranium Pechiney, Paris, France

Filed Sep. 21, 1983, Ser. No. 534,341
Claims priority, application France, Oct. 4, 1982, 82 17102
Int. Cl.³ C02F 1/52
U.S. Cl. 210—713 **7 Claims**



1. In a method of purifying uraniferous aqueous solutions containing impurities comprising at least one of the elements zirconium and/or hafnium, and also containing at least one of the anions $SO_4^{=}$, NO_3^{-}, Cl^{-} or F^{-}, said anions acting as complexing agents for the uranium and impurities, said impurities being precipitated by means of an alkaline agent, said method comprising the following steps carried out for the purpose of selectively and quantitatively separating the impurities from the uranium:

(a) bringing said uraniferous solution to a temperature of at least 40° C.;

(b) adjusting the content of complexing agent to bring the molar ratio:

[complexing agent]/[soluble U + Zr and/or Hf]

to at least 3;

(c) introducing an alkaline agent to adjust the pH of said solution to between 2.2 and 4.3; and

(d) separating the alkaline-treated solution into a solid phase and a liquid phase, said liquid phase comprising a purified uraniferous solution, and said solid phase comprising a zirconium and/or hafnium precipitate.

4,524,002
FOAMING AGENT

Mohamed M. Hashem, Wayne, N.J., assignor to GAF Corporation, Wayne, N.J.

Filed Feb. 23, 1983, Ser. No. 469,069
Int. Cl.³ C09K 7/08
U.S. Cl. 252—8.5 C **9 Claims**

1. A high foaming, electrolyte resistant composition consisting essentially of from about 40 to about 60 weight % of component A having the structure

$$C_6H_{13}(OCH_2CH)_n{-}OSO_3M^+$$
$$\quad\quad\quad

conditions vary from about 3½ to 8 hours, from about 70° to 250° C. and from about ambient pressure.

4,524,005

BORATED DIHYDROCARBYLENETRIAMINE AMIDES AND LUBRICANT AND FUEL COMPOSITIONS CONTAINING SAME

Andrew G. Horodysky, Cherry Hill, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Feb. 1, 1984, Ser. No. 576,180
Int. Cl.³ C10M *1/54*
U.S. Cl. 252—49.6 **26 Claims**

1. A product of reaction made by (1) reacting an amine or a mixture of amines of the formula

$$R—NH—R^1—NH—R^1—NHR$$

wherein R is hydrogen or a C_{10} to C_{30} hydrocarbyl group, at least one R being the latter, and R^1 is the same or different C_2 to C_4 hydrocarbylene group with a carboxylic acid or ester of the formula

$$R^2COOR^3$$

wherein R^2 and R^3 are individually hydrogen or a C_1 to C_4 hydrocarbyl group, (2) followed by reacting the product of (1) with a boron compound selected from the group consisting of boric oxide, a metaborate, a compound of the formula

$$(RO)_xB(OH)_y$$

wherein R is a C_1 to C_6 alkyl group and x and y are 0 to 3, their sum being 3, and mixtures thereof, the amount of acid or ester reacted with the amine being sufficient to react from about 5% to about 95% of the available amino groups and the amount of boron compound reacted with the product from reaction (1) being in excess of the remaining amount required to react with the amino groups.

11. A lubricant composition comprising a major amount of a lubricating oil or grease therefrom and an antifriction amount of a product of reaction made by (1) reacting an amine or a mixture of amines of the formula

$$R—NH—R^1—NH—R^1—NHR$$

wherein R is hydrogen or a C_{10} to C_{30} hydrocarbyl group, at least one R being the latter, and R^1 is the same or different C_2 to C_4 hydrocarbylene group with a carboxylic acid or ester of the formula

$$R^2COOR^3$$

wherein R^2 and R^3 are individually hydrogen or a C_1 to C_4 hydrocarbyl group, followed by reacting the product of (1) with a boron compound selected from the group consisting of boric oxide, a metaborate, a compound of the formula

$$(RO)_xB(OH)_y$$

wherein R is a C_1 to C_6 alkyl group and x and y are 0 to 3, their sum being 3, and mixtures thereof, the amount of acid or ester reacted with the amine being sufficient to react from about 5% to about 95% of the available amino groups and the amount of boron compound reacted with the product from reaction (1) being in excess of the remaining amount required to react with the amino groups.

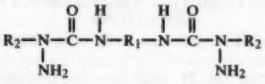
4,524,006

SELECTED ALKYLHYDRAZINE AND HYDROXYALKYLHYDRAZINE ADDUCTS OF DIISOCYANATES AND THEIR USE AS ANTIOXIDANTS

Bonnie B. Sandel, Milford, Conn., assignor to Olin Corporation, Cheshire, Conn.

Filed May 16, 1984, Ser. No. 610,908
Int. Cl.³ C10M *1/32*
U.S. Cl. 252—51.5 A **17 Claims**

1. A method for inhibiting the oxidation of functional fluids selected from the group consisting of liquid hydrocarbon distillate fuels and hydrocarbon lubricant oils and greases which comprises adding to said functional fluid an effective oxidation inhibiting amount of an alkylhydrazine or hydroxyalkylhydrazine adduct of a diisocyanate having the formula:



wherein R_1 is selected from the group consisting of an arylene group containing from 6 to about 12 carbon atoms and a cycloalkylene group containing from about 5 to about 20 carbon atoms; and wherein each R_2 is individually selected from the group consisting of an alkyl group containing from 1 to about 20 carbon atoms and a hydroxyalkyl group containing from 2 to about 20 carbon atoms.

4,524,007

POLYESTER DEMULSIFIERS AND COMPOSITIONS THEREOF

Sheldon Chibnik, Cherry Hill, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Filed May 2, 1983, Ser. No. 490,627
Int. Cl.³ C10M *1/26*
U.S. Cl. 252—56 R **21 Claims**

1. A composition comprising a major amount of an oil of lubricating viscosity or grease prepared therefrom and a minor effective demulsifying amount of an additive compound prepared by esterifying an ether capped alcohol with a carboxylic or polycarboxylic acid, anhydride or dianhydride thereof wherein the carboxylic acid is an aromatic or unsubstituted bridged alicyclic acid or anhydride thereof having at least two carboxyl groups.

4,524,008

CONTROLLED INITIATION CHROMIUM DIOXIDE SYNTHESIS

Horng-Yih Chen, Chadds Ford, Pa., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Dec. 16, 1983, Ser. No. 564,012
Int. Cl.³ C01G *37/027*
U.S. Cl. 252—62.56 **7 Claims**

1. A process for the manufacture of modified ferromagentic chromium dioxide wherein a reaction mixture paste containing trivalent and hexavalent chromium oxides is hydrothermally reacted under a pressure of from 100 to 700 bar at a temperature of 200°–600° C. in the presence of an antimony, iron or tellurium modifier, characterized in that, the modifier is added in aqueous solution to the reaction mixture paste prior to the application of pressure and heat, said solution being prepared by adding the modifier to an aqueous CrO_3 solution and heating to effect dissolution and wherein the modified ferromagnetic chronium dioxide when incorporated into a magnetic tape exhibits lower noise, better print through, narrower coercivity distribution and more uniform switching field distribution than said modified ferromagnetic chromium dioxide produced as above but where the modifier is added in solid form to the reaction mixture paste.

4,524,009
DETERGENT BUILDER

Vivian B. Valenty, Schenectady, N.Y., assignor to A. E. Staley Manufacturing Company, Decatur, Ill.

Filed Jan. 31, 1984, Ser. No. 575,421
Int. Cl.[3] C11D *00/00*
U.S. Cl. 252—89.1 20 Claims

1. A compound of the formula:

$$MOOCCH_2(MOOC)HCOCH_2CH(OH)CH_2OCH(COOM)CH_2COOM$$

wherein M is a salt-forming cation or hydrogen or mixtures thereof.

4,524,010
HIGH-SUDSING, GRANULAR DETERGENT COMPOSITION WITH GREATER GRANULATE STABILITY AND PROCESS FOR ITS PREPARATION

Herbert Reuter, Hilden; Wolfgang Seiter, Neuss, and Ingo Wegener, Dusseldorf, all of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft (KGaA), Dusseldorf, Fed. Rep. of Germany

Filed Nov. 16, 1982, Ser. No. 442,094
Claims priority, application Fed. Rep. of Germany, Dec. 28, 1981, 3151536
Int. Cl.[3] C11D *1/12*
U.S. Cl. 252—135 4 Claims

1. A high sudsing, granular, spray-dried detergent composition with excellent granule stability comprised of anionic surface-active compounds, sodium tripolyphosphate, sodium aluminosilicate and sodium silicate, having a bulk density of from 300 to 400 gm per liter and a mean granule size of 0.4 to 0.8 mm where the amount of granules with a granule size of less than 0.1 mm is less than 10% by weight and the amount of granules with a granule size of more than 1.2 mm is less than 5% by weight, and having the composition of:

(A) from 35% to 45% by weight of a sodium linear alkylbenzene sulfonate having from 10 to 14 carbons atoms in the alkyl,

(B) from 3% to 10% by weight of sodium fatty alcohol sulfate where said fatty alcohol has from 10 to 20 carbon atoms and is selected from the group consisting of alkanols and alkenols,

where the sum of the of the components (A) and (B) is from 40% to 48% by weight,

(C) from 8% to 20% by weight of sodium tripolyphosphate,

(D) from 8% to 18% by weight of finely crystalline, bound water-containing sodium aluminosilicate having the formula:

$$0.7\text{–}1.5\ Na_2O.Al_2O_3.1.3\text{–}4\ SiO_2$$

and having a calcium binding power of at least 100 mg CaO/gm of active substance (AS) and a particle size of less than 25μ, with at least 80% by weight of the particles having a size of less than 10μ,

(E) from 8% to 18% by weight of sodium silicate of the composition:

$$Na_2O:SiO_2 = 1:2 \text{ to } 1:3.5,$$

(F) from 0 to 10% by weight of sodium sulfate and/or sodium carbonate, and

(G) from 8% to 15% by weight of water, including bound water and water of crystallization contained in components (C) to (F), the amount of water removable at a drying temperature of 140° C. being from 4% to 8% by weight,

where the sum of the components (C) to (G) is from 52% to 60% by weight, produced by spray-drying an aqueous slurry of the constituents at drying gas outlet temperature of up to 95° C.

4,524,011
FLUX REMOVAL SOLVENT BLEND

Emmett L. Tasset, Clute, Tex.; Susan M. Dallessandro, Midland, Mich., and Warren F. Richey, Lake Jackson, Tex., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 439,699, Nov. 8, 1982, abandoned. This application Nov. 4, 1983, Ser. No. 549,364
Int. Cl.[3] C11D *7/50*
U.S. Cl. 252—171 11 Claims

1. A methylchloroform rosin flux removal composition having no flash point as measured by Cleveland Open Cup method consisting essentially of:

(a) a stabilized methylchloroform,

(b) from about 0.5 to less than about 2 volume percent methanol,

(c) from about 3 to about 10 volume percent of at least one alcohol having from 2 to 5 carbon atoms, and

wherein the volume of components (b) and (c) are based on the total composition, and wherein said rosin flux is removed from a substrate by said composition to the extent that, after cleaning in said composition, said substrate upon being placed in a 75% by volume aqueous isopropyl alcohol solution for 5 minutes and subjected to ultrasonic vibration will provide a resistivity to said alcohol solution of at least 10×10^5 ohm-cm.

4,524,012
FABRIC SOFTENING AND FLUFFING DETERGENT COMPOSITION

Harold E. Wixon, New Brunswick, N.J., assignor to Colgate-Palmolive Company, New York, N.Y.

Filed Jun. 8, 1983, Ser. No. 500,590
Int. Cl.[3] C11D *9/06, 3/12, 7/10;* D06M *13/00*
U.S. Cl. 252—174 20 Claims

1. A fabric softening and fabric fluffing particulate detergent composition which comprises spray dried beads containing a detersive proportion of an anionic synthetic organic detergent and a building proportion of a builder for such detergent, a fabric softening proportion of bentonite, which is capable of softening fabrics during washing thereof with the anionic detergent and builder, and a softening and fluffing proportion of a magnesium compound which is at least slightly water soluble, in such proportion that it improves the softening effect of the bentonite and improves the fluffiness of the fabrics washed with the detergent composition, which bentonite and magnesium compound are external to the spray dried beads of anionic synthetic organic detergent and builder.

4,524,013
POWDERED NONIONIC-BASED DETERGENT COMPOSITIONS CONTAINING SODIUM ACETATE TRIHYDRATE

Vincent Lamberti, Upper Saddle River, N.J., assignor to Lever Brothers Company, New York, N.Y.

Filed Apr. 6, 1984, Ser. No. 597,630
Int. Cl.[3] C11D *1/83*
U.S. Cl. 252—174.21 4 Claims

1. A particulate non-phosphate detergent composition comprising a nonionic detergent active compound or compounds which further comprises in admixture therewith an effective amount of particulate sodium acetate trihydrate to substantially arrest and/or inhibit nonionic bleeding from said detergent composition.

4,524,014

PHOTOBLEACH SYSTEM, COMPOSITION AND PROCESS

Timothy D. Finch, Wirral, and Stuart W. Beavan, Birkenhead, both of England, assignors to Lever Brothers Company, New York, N.Y.

Filed Feb. 17, 1983, Ser. No. 467,545
Claims priority, application United Kingdom, Feb. 19, 1982, 8204959; Mar. 9, 1982, 8206842
Int. Cl.³ H07J 7/18; C11D 7/54
U.S. Cl. 252—188.1 15 Claims

1. A photobleach system comprising a synergistic mixture of

(a) an electron donor which on transferring its electron will not be capable of undergoing the reverse reaction, having a reduction potential E° (donor^{+}/donor) <3.0 eV, and

(b) a visible/ultra-violet radiation absorbing compound (chromophore acceptor) which on absorption of said radiation is converted to its excited electronic state (chromophore acceptor*) which on electron transfer from said electron donor forms a reactive radical anion (chromophore acceptor), said chromophore acceptor having a reduction potential (acceptor/acceptor) $\leqq 0.0$ eV and E° (acceptor*/acceptor) $\leqq 3.0$ eV,

the E° (donor^{+}/donor) being lower than the E° (acceptor*-/acceptor).

4,524,015

OXYGEN ABSORBENT

Hideyuki Takahashi; Toshio Komatsu, and Yoshiaki Inoue, all of Tokyo, Japan, assignors to Mitsubishi Gas Chemical Company, Inc., Tokyo, Japan

Filed Aug. 5, 1983, Ser. No. 521,167
Claims priority, application Japan, Aug. 9, 1982, 57-138241; Aug. 17, 1982, 57-142292
Int. Cl.³ C09K 15/02; A23B 7/14; A23D 5/04
U.S. Cl. 252—188.28 8 Claims

1. A particulate or granular oxygen absorbent comprising at least one ascorbic compound selected from ascorbic acid, ascorbic acid salts or mixtures thereof, an alkali metal carbonate, an iron compound, carbon black and water.

4,524,016

PROCESS FOR SPHEROIDAL BAFCL:EU PHOSPHOR PARTICLES

August Ferretti, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Jun. 28, 1983, Ser. No. 509,324
Int. Cl.³ C09K 11/465
U.S. Cl. 252—301.4 H 7 Claims

1. Process for preparing spheroidal particulate BaFCl:Eu phosphor having a narrow size distribution, which process comprises:

(a) spray drying the slurry comprised of BaFCl, or the precursors thereof, a europium halide, and a $BaCl_2$ flux in a liquid under conditions which produce porous spheroidal agglomerates of BaFCl, or the precursors thereof, $BaCl_2$, and the europium halide, the agglomerates having an average diameter larger than the desired diameter of the particulate phosphor;

(b) firing the porous spheroidal agglomerates of step (a) in a flowing inert atmosphere for about 10 to about 120 minutes at a temperature of about 650° C. to about 950° C.;

(c) cooling the fired material of step (b) to ambient temperature in an inert atmosphere;

(d) washing the cooled material of step (c) with water to remove $BaCl_2$; and

(e) drying the washed material of step (d) to remove the water and to produce the free flowing powder consisting essentially of spheroidal particulate BaFCl:Eu phosphor.

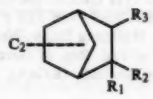
4,524,017

DERIVATIVES OF NORBORNANES HAVING HYDROCARBON SIDE CHAINS AND PERFUME COMPOSITIONS CONTAINING THE SAME

Yoshiharu Inoue, Osaka; Fumio Tanimoto, Kyoto, and Hisao Kitano, Osaka, all of Japan, assignors to Nippon Petrochemicals Co., Ltd., Tokyo, Japan

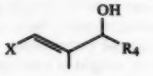
Filed Feb. 24, 1982, Ser. No. 351,993
Claims priority, application Japan, Feb. 28, 1981, 56-29188; Feb. 28, 1981, 56-29189; Aug. 22, 1981, 56-131743; Aug. 22, 1981, 56-131744
Int. Cl.³ A61K 7/46; C07C 47/445, 47/347, 33/14
U.S. Cl. 252—522 R 6 Claims

1. A norbornane derivative having a hydrocarbon side chain which is represented by the following general formula (I)



(I)

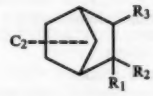
wherein C_2 is an ethylidene group or a vinyl group connected to the 5 or 6 position of the norbornane ring, the dashed line connected to C_2 is a single bond when C_2 is a vinyl group and a double bond when C_2 is an ethylidene group, each of R_1 and R_2 is a hydrogen atom or a methyl group, and R_3 is a formyl group or a group represented by the following general formula (II)



(II)

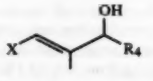
wherein R_4 is a methyl group, an ethyl group, a n-propyl group or an isopropyl group and X is a carbon atom of the norbornane ring.

6. A perfume composition containing a compound represented by the following general formula (I)



(I)

wherein C_2 is an ethylidene group or a vinyl group connected to the 5 or 6 position of the norbornane ring, the dashed line connected to C_2 is a single bond when C_2 is a vinyl group and a double bond when C_2 is an ethylidene group, each of R_1 and R_2 is a hydrogen atom or a methyl group, and R_3 is a formyl group or a group represented by the following general formula (II)



(II)

wherein R_4 is a methyl group, an ethyl group, a n-propyl group or an isopropyl group and X is a carbon atom of the norbornane ring.

4,524,018
LASTING FRAGRANT ARTICLE USING GRADUALLY DECOMPOSING PERFUME

Jiichiro Yemoto, Kumamoto; Ryokichi Tarao, Kanagawa, and Yoshio Yamamoto, Kumamoto, all of Japan, assignors to Chisso Corporation, Osaka and S.T. Chemical Co., Ltd., Tokyo, both of, Japan

Filed Jul. 28, 1982, Ser. No. 402,810
Claims priority, application Japan, May 28, 1982, 57-90946
Int. Cl.[3] A61K *7/46*; C11B *9/00*
U.S. Cl. 252—522 A **5 Claims**

1. A fragrant article which comprises a pregnant impregnated with a composition containing at least one perfume and at least one aromatizing component of the formula:

$$R_aSi(OR')_b(OR'')_c$$

wherein R is selected from the group consisting of hydrogen and a saturated or unsaturated aliphatic hydrocarbon group having 1 to 10 carbon atoms; R′ is selected from the group consisting of alkyl and alkenyl having 1 to 5 carbon atoms; R″ is a saturated or an unsaturated aliphatic hydrocarbon group, having 5 or 6 carbon atoms, with the proviso that R″ develops aroma in the form of R″OH; each of R, R′ and R″ may be the same or different if two or more of them are present in the same molecule; a is zero or an integer of from 1 to 3, b is zero or an integer of from 1 to 3, and c is an integer of from 1 to 4, with the proviso that a+b+c=4.

4,524,019
SPIRO-LACTONE DERIVATIVES, THEIR USE AS PERFUMING AGENTS, AND PERFUMING COMPOSITION CONTAINING SAME

Wolfgang K. Giersch, and Günther Ohloff, both of Bernex, Switzerland, assignors to Firmenich, SA, Switzerland

Filed Jul. 25, 1983, Ser. No. 517,024
Claims priority, application Switzerland, Aug. 12, 1982, 4835/82
Int. Cl.[3] A61K *7/46*; C07D *307/94, 311/96*
U.S. Cl. 252—522 R **5 Claims**

1. A method to improve, enhance or confer a coumarin type perfume character to fragrance compositions which comprises adding thereto a perfume effective amount of a compound selected from the group consisting of 5,9-Dimethyl-1-oxaspiro[5.5]undec-8-en-2-one, 9-Methyl-5-methylene-1-oxaspiro[5.5]undec-8-en-2-one and 4,8-Dimethyl-1-oxaspiro[4.5]-dec-7-en-2-one.

3. 5,9-Dimethyl-1-oxaspiro[5.5]undec-8-en-2-one.

4. 9-Methyl-5-methylene-1-oxaspiro[5.5]undec-8-en-2-one.

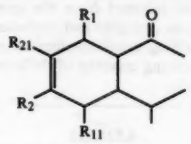
5. 4,8-Dimethyl-1-oxaspiro[4.5]dec-7-en-2-one.

4,524,020
ISOPROPYL SUBSTITUTED CYCLOHEXENYL METHYL KETONES AND PERFUMERY USES THEREOF

Mark A. Sprecker, Sea Bright; Robert P. Belko, Woodbridge, both of N.J.; Augustinus G. Van Loveren, Ryebrook, N.Y., and Marie R. Hanna, Hazlet, N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Filed Aug. 24, 1984, Ser. No. 643,827
Int. Cl.[3] A61K *7/46*; C07C *49/21*
U.S. Cl. 252—522 R **11 Claims**

1. An isopropyl substituted cyclohexenyl methyl ketone defined according to the structure:



wherein R_1, R_2, R_{11} and R_{21} each represents hydrogen or methyl with the provisos that:

(a) at least two of R_1, R_{21}, R_2 and R_{11} represent hydrogen;

(b) either R_2 is methyl and R_{21} is hydrogen or R_{21} is methyl and R_2 is hydrogen; and

(c) R_1 is methyl only when R_2 is methyl and R_{11} is methyl only when R_{21} is methyl.

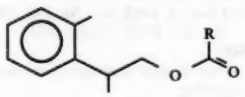
5. A process for augmenting or enhancing the aroma of a consumable material selected from the group consisting of perfume compositions, colognes and perfumed articles comprising the step of intimately admixing with said consumable material an aroma augmenting or enhancing quantity of at least one isopropyl substituted cyclohexenyl methyl ketone defined according to claim 1.

4,524,021
PERFUMERY USES OF ESTERS OF PHENYL ALKANOLS

Wilhelmus J. Wiegers, Red Bank, and Mark A. Sprecker, Sea Bright, both of N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

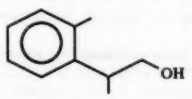
Division of Ser. No. 491,657, May 5, 1983,. This application Jun. 5, 1984, Ser. No. 617,585
Int. Cl.[3] A61K *7/46*; C11B *9/00*
U.S. Cl. 252—522 R **2 Claims**

1. The composition comprising the compound defined according to the structure:



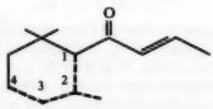
wherein R is methyl or ethyl and, intimately admixed therewith, a compound selected from the group consisting of:

(a) a compound having the structure:



(b) 3-methyl-1-phenyl-pentanol-5; and

(c) at least one butanoyl cyclohexane derivative defined according to the structure:



wherein one or two of the dashed lines represent carbon-carbon double bonds and the other of the dashed lines represent carbon-carbon single bonds with the proviso that when the dashed lines represent two carbon-carbon double bonds, said carbon-carbon double bonds are conjugated.

2. A process for augmenting or enhancing the aroma of a consumable material selected from the group consisting of perfume compositions, colognes and perfumed polymers comprising the step of adding to said consumable material an aroma augmenting or enhancing quantity of the composition defined according to claim 1.

4,524,022

DICYCLOPENTADIENE SULFONATE LIQUID DETERGENT FORMULATIONS

Carter G. Naylor, Austin, Tex., assignor to Texaco Inc., White Plains, N.Y.

Filed Nov. 3, 1983, Ser. No. 548,538
Int. Cl.³ C11D *1/12, 1/831, 3/44*
U.S. Cl. 252—548 **13 Claims**

1. A highly concentrated liquid detergent composition comprising:

(a) about 25 wt. % to about 50 wt. % of a surface active agent comprising:

(i) a nonionic surfactant in the amount of about 20 wt. % to about 40 wt. %, and

(ii) an anionic surfactant in the amount of about 0 wt. % to about 20 wt. %;

(b) about 0 wt. % to about 10 wt. % of a solvent selected from the group consisting of ethanol, isopropanol and mixtures thereof;

(c) a hydrotrope selected from the group consisting of the ammonium, sodium, potassium, calcium and magnesium salts of dicyclopentadiene sulfonate in an amount sufficient to give the highly liquid detergent a kinematic viscosity of from 50 to 500 cs at 25° C.; and

(d) water.

4,524,023

BICYCLODECYL ETHER SULFONATES AND COMPOSITIONS CONTAINING THE SAME

David R. McCoy, and Carter G. Naylor, both of Austin, Tex., assignors to Texaco Inc., White Plains, N.Y.

Filed Nov. 3, 1983, Ser. No. 548,539
Int. Cl.³ C11D *1/22, 1/831*
U.S. Cl. 252—548 **7 Claims**

1. A highly concentrated homogeneous liquid detergent composition comprising:

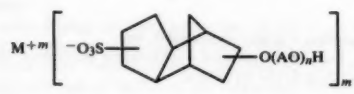
(a) about 25 wt. % to about 50 wt. % of a surface active agent comprising:

(i) an anionic surfactant and

(ii) a nonionic surfactant wherein the weight ratio of anionic:nonionic is 0:1 to 2:1;

(b) 0 wt. % to about 10 wt. % of a solvent selected from the group consisting of ethanol, isopropanol and mixtures thereof;

(c) a bicyclodecyl ether sulfonate hydrotrope of the formula:



wherein

AO is an alkyleneoxy selected from the group consisting of ethyleneoxy, propyleneoxy and mixtures thereof;

n is an integer averaging from 0 to 20; and

M is a cation selected from the group consisting of ammonium, sodium, potassium, calcium and magnesium; and

m is 1 or 2

wherein the hydrotrope is an amount sufficient to give the liquid detergent a kinematic viscosity of from 100 to 250 cps @ 25° C., and

(d) water.

4. The composition of claim 1 wherein the surface active agent comprises:

(i) from 5 wt. % to 15 wt. % of the anionic surfactant dodecylbenzene sulfonate, and

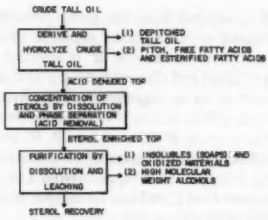
(ii) from 25 wt. % to 35 wt. % of a nonionic surfactant which is a 2:1 to 8:1 (wt:wt) mixture of the 8.5 molar ethoxylate of nonylphenol and triethanolamine.

4,524,024

PROCESSES OF RECOVERING FATTY ACIDS AND STEROLS FROM TALL OIL PITCH

Richard E. Hughes, London, England, assignor to The Badger Company, Inc., Cambridge, Mass.

Filed Feb. 10, 1983, Ser. No. 465,650
Int. Cl.³ C09F *1/00*
U.S. Cl. 260—97.6 **29 Claims**


CRUDE TALL OIL
DERIVE AND HYDROLYZE CRUDE TALL OIL
(1) DEPITCHED TALL OIL
(2) PITCH, FREE FATTY ACIDS AND ESTERIFIED FATTY ACIDS
ACID DENUDED TOP
CONCENTRATION OF STEROLS BY DISSOLUTION AND PHASE SEPARATION (ACID REMOVAL)
STEROL ENRICHED TOP
PURIFICATION BY DISSOLUTION AND LEACHING
(1) INSOLUBLES (SOAPS) AND OXIDIZED MATERIALS
(2) HIGH MOLECULAR WEIGHT ALCOHOLS
STEROL RECOVERY

1. The process of enhancing the recovery of fatty acids from crude tall oil, the process comprising the steps of:

distilling crude tall oil so as to form a first fraction comprising pitch, free fatty acids and fatty acid esters, a second tall oil fraction comprising largely non-volatile material and a third depitched tall oil fraction rich in fatty acids;

separating said first, second and third fractions;

recovering said second and third fractions;

hydrolyzing said first fraction so as to convert at least some of said fatty acid esters to fatty acids;

distilling said hydrolyzed first fraction so as to form additional amounts of said third fraction from said hydrolyzed first fraction; and

recovering said additional amounts of said third fraction while reducing the overall amount of said second fraction.

4,524,025

HYBRIDOMA CELL LINES AND MONOCLONAL ANTIBODIES TO THEOPHYLLINE

John E. Geltosky, Hockessin, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 393,680, Jun. 30, 1982, abandoned. This application Aug. 9, 1982, Ser. No. 406,554
Int. Cl.³ A23J *1/00*; C12P *21/00*; C12N *5/00*; G01N *33/54*
U.S. Cl. 260—112 R **3 Claims**

1. Mouse monoclonal IgG isotype antibody to theophylline having 5% or less cross-reactivity with caffeine wherein the hybrid continuous cell line producing said antibody is a hybrid of a spleen cell from a mouse immunized with an 8-substituted theophylline-carrier conjugate and a mouse myeloma cell line.

4,524,026

NOVEL PROTEINOUS CANCER-CELL PROLIFERATION INHIBITORY FACTORS

Yoshio Sakagami, No. 3-16-19, Jugaoka, Meguro-ku, Tokyo, and Hofumi Manabe, No. 2-5-27, Inogashira, Mitaka-shi, Tokyo, both of Japan

Filed Aug. 27, 1984, Ser. No. 644,234
Claims priority, application Japan, Aug. 29, 1983, 58-158858; Sep. 1, 1983, 58-161237
Int. Cl.³ C07G *7/00*; A61K *43/00*
U.S. Cl. 260—112 B **5 Claims**

1. A glycoprotein, fractionated from human blood or sera

and named cancer-cell proliferation inhibitory factor A (T.D.F.H.A), which is a white powder melting at 245° to 249° C. (with decomposition); has a molecular weight of approximately 73,900 when measured by electrophoresis in 10% sodium dodecylsulfate solution; is readily soluble in water, and insoluble in butanol, acetone, ethyl acetate, chloroform, benzene and hexane; has an amino acid composition of 10.0% aspartic acid, 5.4% threonine, 3.8% serine, 16.0% glutamic acid, 4.2% proline, 1.4% glycine, 4.8% alanine, 2.6% cystine, 5.1% valine, 0.8% methionine, 2.2% isoleucine, 9.6% leucine, 4.9% tyrosine, 5.7% phenylalanine, 11.4% lysine, 3.5% histidine and 5.2% arginine in error of ±10% to the % values; shows a positive response to the ninhydrin, anthrone, Molish and periodic acid reactions; gives an infrared absorption spectrum as shown in FIG. 1 (KBr pellet); and exhibits ultraviolet absorption maxima at 279 nm in water of pH 3.0, at 278 nm in water of pH 7.0 and at 277 nm in water of pH 10.0, and is obtainable from the human body.

4,524,027

MEMBRANE-ASSOCIATED PROTEINS (MP_2), A PROCESS FOR OBTAINING THEM, AND THEIR USE

Hans Bohn, Marburg, Fed. Rep. of Germany, assignor to Behringwerke Aktiengesellschaft, Marburg, Fed. Rep. of Germany

Filed Sep. 21, 1984, Ser. No. 653,037

Claims priority, application Fed. Rep. of Germany, Sep. 23, 1983, 3334405

Int. Cl.[3] **C07G** *7/00;* **A61K** *35/42, 35/50, 39/395*

U.S. Cl. 260—112 R **3 Claims**

1. Proteins MP_2 having the following characteristics:

(a) an electrophoretic mobility in the range between that of α_2 and that of β_1 globulins;

(b) an isoelectric point in the pH range 4.4–5.0;

(c) a sedimentation coefficient $s_{20w}{}^c$ in the range from 7 to above 20 S, the main fractions (IV, III, II and I) sedimenting at about 7, 9, 14 and 20 S respectively;

(d) molecular weights in the range from 200,000 to 1,000,000, the main fractions (IV, III, II and I) having molecular weights of about 210,000, 400,000, 750,000 and 1,000,000;

(e) an extinction coefficient $E_{1cm}{}^{1\%}$ (280 nm) of 12.5±0.2;

(f) a carbohydrate content of 8.0±3.2% (mannose 1.4±0.4%, fucose 0.4±0.2%, galactose 1.2±0.4%, N-acetylglucosamine 2.6±1.8%, and N-acetylneuraminic acid 2.4±1.4%) and

(g) an aminoacid composition in which aspartic acid, glutamic acid, leucine, valine, serine and glycine are among the aminoacids present in greatest amounts.

4,524,028

MONOCYCLIC INTERMEDIATES FOR THIA-AZA COMPOUNDS WITH A β-LACTAM RING

Jacques Gosteli, Basel; Ivan Ernest, Birsfelden, both of Switzerland, and Robert B. Woodward, Cambridge, Mass., assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

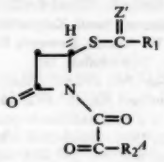
Division of Ser. No. 353,288, Mar. 1, 1982, , which is a division of Ser. No. 902,639, May 4, 1978, Pat. No. 4,331,676. This application Sep. 24, 1982, Ser. No. 423,359

Claims priority, application Luxembourg, May 9, 1977, 77306

Int. Cl.[3] **C07D** *205/08, 403/12, 401/12, 487/04*

U.S. Cl. 260—239 A **2 Claims**

1. (Compounds of the formula



(XII)

in which Z^1 represents oxygen, sulphur or a methylidene group optionally mono- or di-substituted by lower alkyl, cycloalkyl, cycloalkyl-lower alkyl, phenyl, phenyl-lower alkyl or esterified carboxy, R_1 represents hydrogen; lower alkyl; cycloalkyl; cycloalkyl-lower alkyl; phenyl; naphthyl; phenyl-lower alkyl; lower alkyl, cycloalkyl, cycloalkyl-lower alkyl, phenyl, naphthyl or phenyl-lower alkyl monosubstituted by hydroxy, lower alkoxy, lower alkanoyloxy, halogen, mercapto, lower alkylthio, carboxyl, lower alkoxycarbonyl, carbamoyl, cyano, nitro, amino, amino mono- or di-substituted by lower alkyl, or lower alkyleneamino; amino-lower alkyl in which the amino group is acylated by acetyl, phenoxyacetyl, tert.-butoxycarbonyl, benzyloxycarbonyl or p-nitrobenzyl-oxycarbonyl; protected carboxyl; aminocarbonyl; aminocarbonyl mono- or di-substituted by lower alkyl; pyridyl; thienyl; furyl; pyridyl-lower alkyl; thienyl-lower alkyl; furyl-lower alkyl; lower alkylthio; lower alkenylthio; cyclo-alkylthio; cycloalkyl-lower alkylthio; phenylthio; phenyl-lower alkylthio; or lower alkylthio, lower alkenylthio, cycloalkylthio, cycloalkyl-lower alkylthio, phenylthio or phenyl-lower alkylthio monosubstituted by hydroxy, lower alkoxy, lower alkanoyloxy, halogen, mercapto, lower alkylthio, carboxyl, lower alkoxycarbonyl, carbamoyl, cyano, nitro, amino, amino mono- or di-substituted by lower alkyl, lower alkanoylamino or lower alkeyleneamino; and R_2a together with the carbonyl grouping —C(=O)— to which it is attached represents a protected carboxyl group.

4,524,029

PROCESS FOR SEPARATING FATTY ACIDS

Michael T. Cleary, Elmhurst; Santi Kulprathipanja, Hoffman Estates, and Richard W. Neuzil, Downers Grove, all of Ill., assignors to UOP Inc., Des Plaines, Ill.

Filed Sep. 22, 1983, Ser. No. 534,911

The portion of the term of this patent subsequent to Sep. 13, 2000, has been disclaimed.

Int. Cl.[3] **C11C** *1/08*

U.S. Cl. 260—419 **9 Claims**

1. A process for separating a saturated fatty acid from an unsaturated fatty acid contained in a feed mixture comprising said acids, said process comprising contacting said feed mixture at separation conditions with a molecular sieve comprising a crystalline silica having a silica to alumina mole ratio of at least 12, thereby selectively retaining said saturated fatty acid, removing the remainder of the feed mixture from the molecular sieve, and recovering said saturated fatty acid from said molecular sieve by displacement at displacement conditions, with a displacement fluid comprising a diluent soluble in said feed mixture and having a polarity index of at least 3.5.

4,524,030
PROCESS FOR SEPARATING FATTY ACIDS

Michael T. Cleary, Elmhurst; Santi Kulprathipanja, Hoffman Estates, and Richard W. Neuzil, Downers Grove, all of Ill., assignors to UOP Inc., Des Plaines, Ill.

Continuation-in-part of Ser. No. 474,999, Mar. 14, 1983, which is a continuation-in-part of Ser. No. 407,672, Aug. 12, 1982, Pat. No. 4,404,145, which is a continuation-in-part of Ser. No. 333,250, Dec. 21, 1981, abandoned, which is a continuation-in-part of Ser. No. 297,453, Aug. 28, 1981, abandoned, which is a continuation-in-part of Ser. No. 252,745, Apr. 10, 1981, Pat. No. 4,329,280. This application Oct. 7, 1983, Ser. No. 539,859

Int. Cl.³ C11C *1/08*

U.S. Cl. 260—419 10 Claims

1. A process for separating a fatty acid from a feed mixture comprising a fatty acid and a rosin acid, said process comprising contacting said feed mixture at separation conditions with a molecular sieve comprising a crystalline silica having a silica to alumina mole ratio of at least 12, thereby selectively retaining said fatty acid, and removing rosin acid from the fatty acid containing molecular sieve, said fatty acid being recovered from said molecular sieve by displacement at displacement conditions with a displacement fluid comprising an ester containing less than six carbon atoms per molecule.

4,524,031
FLUOROSULFATOPERFLUOROCARBONYL COMPOUNDS

Hans Millauer, Eschborn; Günter Siegemund, Hofheim am Taunus, and Werner Schwertfeger, Butzbach, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Division of Ser. No. 300,919, Sep. 10, 1981, abandoned. This application May 20, 1983, Ser. No. 496,634

Claims priority, application Fed. Rep. of Germany, Sep. 12, 1980, 3034491

Int. Cl.³ C07C *141/00*

U.S. Cl. 260—456 F 3 Claims

1. A perfluorocarbonyl compound of the formula

$$R_f\text{—}\underset{\underset{OSO_2F}{|}}{CF}\text{—}R'_f\text{—}[CF_2\text{—}O\text{—}\underset{\underset{CF_3}{|}}{CF}]_n\text{—}COF,$$

wherein

R_f is perfluoroalkyl having 1 to 10 carbon atoms,

R_f is perfluoroalkylene having 1 to 10 carbon atoms, and

n is 0 to 10.

4,524,032
DIRECT FLUORINATION OF ETHERIFIED OR UNETHERIFIED HYDROXY GROUP BEARING AROMATIC COMPOUNDS

Susumu Misaki; Sadamu Ishii, and Masahiro Suefuji, all of Osaka, Japan, assignors to Daikin Kogyo Co., Ltd., Osaka, Japan

Continuation of Ser. No. 144,020, Apr. 28, 1980, abandoned. This application Jan. 14, 1983, Ser. No. 458,095

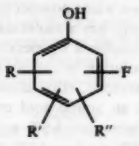
Claims priority, application Japan, Apr. 28, 1979, 54-53136

Int. Cl.³ C07C *121/50, 41/00, 39/12*

U.S. Cl. 260—465 F 9 Claims

1. A process for the direct fluorination of hydroxy group-bearing aromatic compounds which comprises reacting a hydroxy group-bearing aromatic compound with fluorine gas in an inert solvent at a temperature of from −40° to 10° C. to give the corresponding product having at least one hydroxy group and at least one fluorine atom thereon.

8. The process according to claim 1, wherein said product is represented by the formula:



wherein R, R' and R'' are each hydrogen, halogen, lower alkyl, lower alkoxy, hydroxy, nitro, cyano, formyl, phenyl, hydroxyphenyl or lower alkoxyphenyl.

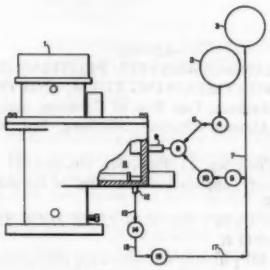
4,524,033
MULTIPLE FUEL CARBURETOR

Jefferson D. Elledge, 8060 Northcrest Dr., Jonesboro, Ga. 30236

Filed Mar. 31, 1983, Ser. No. 480,796

Int. Cl.³ F02M *1/16*

U.S. Cl. 261—18 B 2 Claims



1. A dual fuel supply system for internal combustion engines comprising a first tank adapted to contain gasoline and a second tank adapted to contain a second fuel, first and second fuel pumps connected to said first and second tanks respectively and adapted to supply fuel to electrically operated selector valve means controlling the discharge of fuel into a carburetor float bowl, electrical switch means adapted to be manually operated to selectively energized alternate of said pumps and simultaneously move said selector valve means to either a first position transmitting fuel from said first pump or to a second position transmitting fuel from said second pump, said fuel bowl having a drain tube therein, said drain tube including a normally closed solenoid valve and a normally inactive electric fuel pump and discharging into said second fuel tank, and electric switch means adapted to energize said drain-line solenoid valve and pump to empty said bowl.

4,524,034
CARBURETOR

Benjamin L. Ellison, 350 Airport Way, Renton, Wash. 98055

Continuation-in-part of Ser. No. 367,897, Apr. 13, 1982, abandoned, which is a continuation-in-part of Ser. No. 270,593, Jun. 4, 1981, abandoned. This application Nov. 9, 1983, Ser. No. 550,301

Int. Cl.³ F02M *9/06*

U.S. Cl. 261—44 A 25 Claims

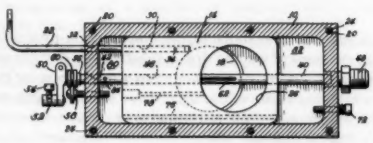
1. In a fluid device having a first fluid passageway, a throttle valve having an adjustable throttle opening mounted to alterably constrict the first fluid passageway and thereby control the effective cross-sectional dimension of the passageway, and a fluid metering system for supplying a second fluid to the first fluid passageway for mixture with the first fluid passing therethrough, the improvement wherein the fluid metering system comprises:

a. a fluid supply including means for supplying a substan-

tially continuous distribution of said second fluid across said throttle opening, said supply means having a distribution outlet extending across said throttle opening, and said second fluid being supplied along the entire distribution outlet,

b. means responsive to adjustment of said throttle opening to change the effective length of said distribution outlet responsive to change of the effective cross-sectional dimension of the first fluid passageway,

c. fluid opening means in said distribution outlet to supply a non-uniform distribution of said second fluid across said throttle opening, said fluid opening means increasing in fluid discharge rate at a greater rate than the increase of



the effective cross-sectional dimension of said first fluid passageway as the throttle valve is opened in order to increase the distribution of said second fluid as the effective cross-sectional dimension of said first fluid passageway is increased,

d. means to maintain the second fluid at a pressure no greater than the total pressure of the first fluid, and

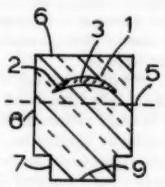
e. means to alter the proportionate flow of the second fluid through said distribution outlet in relation to the flow of the first fluid in said passageway, said means to alter including means for sensing the dynamic pressure of said first fluid and for altering the rate of supply of said second fluid responsive to a percentage of said sensed dynamic pressure.

4,524,035

METHOD OF MAKING BIFOCAL LENS BLANKS

Charles W. Neefe, 811 Scurry St., Box 429, Big Spring, Tex. 79720

Filed Jun. 8, 1984, Ser. No. 618,746
Int. Cl.³ B29D *11/00*
U.S. Cl. 264—1.8 **14 Claims**



1. A method of making bifocal resinous lens blanks by the steps of, providing a positioning cylinder connected to a low refractive index polymer, placing the positioning cylinder in a lathe collet and cutting a first convex optical surface orientated with the positioning cylinder, casting a high refractive index liquid monomer on the convex surface of the low refractive index polymer polymerizing the high refractive index monomer to form a high refractive index polymer, placing the positioning cylinder in a lathe collet a second time and cutting a second shorter radius optical surface orientated with the positioning cylinder and intersecting the first longer radius optical surface and both the low refractive index polymer material and the high refractive index polymer material, casting low refractive index monomer over the second shorter radius optical surface and polymerizing the monomer to form a monolithic mass to form a blank from which a bifocal lens is made.

4,524,036

PROCESS FOR THE MANUFACTURE OF POLYURETHANE RESIN FOR ELECTROSTATIC SPINNING

Denis K. Gilding, Groton, Mass., and Roy M. Clarke, Liverpool, England, assignors to University of Liverpool, England and Vascor Inc., Calif.

Continuation of Ser. No. 501,039, Jun. 6, 1983, abandoned, which is a continuation of Ser. No. 291,649, Aug. 10, 1981, abandoned. This application Apr. 9, 1984, Ser. No. 597,968
Int. Cl.³ B29C *6/00, 23/00*
U.S. Cl. 264—10 **21 Claims**

1. In a process of electrostatic spinning of urethane polymers to form fine diameter fibers wherein a solution of a urethane polymer is introduced into an electrostatic field in the form of droplets which are attenuated into fibers while being drawn to an electrode where the fibers are collected, the improvement which comprises using as the said urethane polymer a polyurethane resin produced by a process which comprises the steps of:

a. reacting in a volatile organic solvent a polyalkylene ether glycol and an organic diisocyanate in a molar ratio of about 1:2 to form a prepolymer;

b. reacting said prepolymer with additional organic diisocyanate and an alkanediol extender in a volatile organic solvent to form a polyurethane resin, the final molar ratios of the polyalkylene ether glycol, organic diisocyanate, and alkanediol being about 1:3.7:2.5;

c. continuing said reaction with incremental additions of volatile organic solvent until a 25 to 30 percent by weight solids solution of said polyurethane resin having an inherent viscosity of from about 2.0 to 2.4 is obtained; and

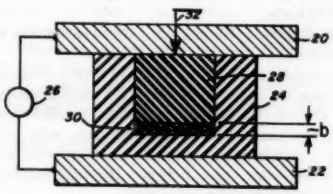
d. terminating said reaction by the addition of an alcohol.

4,524,037

METHOD AND APPARATUS FOR FORMING A FLEXIBLE THERMOPLASTIC RESIN FOAM ARTICLE USING AN RF FIELD

Michel Marc, 48 Ridge Hill Farm Rd., Wellesley, Mass. 02181

Filed Aug. 16, 1982, Ser. No. 408,159
Int. Cl.³ B29D *27/00*
U.S. Cl. 264—26 **15 Claims**



1. A process of forming a flexible, thermoplastic foam article using a mold with a mold cavity, a pair of electrodes across which an RF field may be impressed and compressing means, said process comprising the steps of:

inserting a preform of the foam material into the mold;

compressing the foam material with the compressing means;

applying an RF heating field while maintaining the foam material compressed to heat the foam material to a temperature below the temperature at which the foam material would become permanently deformed into its compressed state;

withdrawing the compressing means; and

permitting the foam material to expand to conform to and in substance fill said mold cavity as the material cools to

cause the foam material to permanently deform to assume the general shape and size of the mold cavity.

4,524,038

METHOD OF MAKING A VIBRATION-RESISTANT ELECTRICAL COMPONENT AND CONNECTION LEAD COMBINATION, PARTICULARLY EXHAUST GAS COMPOSITION SENSOR

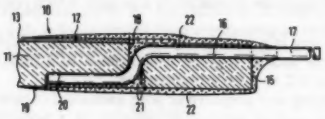
Wolfgang Heinemann, Weissach; Rainer Noack, Bietigheim, and Helmut Weyl, Schwieberdingen, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Sep. 27, 1982, Ser. No. 424,536

Claims priority, application Fed. Rep. of Germany, Dec. 19, 1981, 3150435

Int. Cl.³ B28B *23/00*

U.S. Cl. 264—61 **24 Claims**



1. Method of making an electrical component which comprises

a substrate (**11, 11'**) of brittle, sinterable material having the characteristic of shrinking upon sintering and having an exposed surface (**13, 19**);

a layer electrode (**12, 12'**) applied to said exposed surface;

an electrical connection wire (**17**) electrically connected to said layer electrode and mechanically retained on the substrate;

wherein a bonding mass is provided, securing the connecting wire to the substrate and retaining said wire thereon,

comprising, in accordance with the invention, the steps of

forming the substrate (**11, 11'**) in unsintered state;

forming the surface (**13, 19**) of the substrate in the region of the connection of the layer electrode (**12, 12'**) and the connection wire (**17**) with a channel-like depression or groove (**16, 16'**) extending essentially parallel to said surface, the groove being defined and positioned between groove walls;

pre-sintering the so formed substrate to render the substrate form-stable;

applying said layer electrode (**12, 12'**) to said surface (**13, 19**);

positioning the connection wire (**17**) longitudinally within said groove (**16, 16'**) and essentially parallel to said surface, the diameter of said connection wire being just slightly smaller than the width of the groove to leave a small clearance space between the longitudinally positioned and opposed groove walls;

introducing an electrically conductive sinterable bonding material (**21**) into the clearance space between the groove walls and the connection wire,

said sinterable bonding material surrounding and embedding the connection wire therein to form a sub-assembly comprising the substrate (**11, 11'**), the layer electrode (**12, 12'**) thereon, the connection wire (**17**) within the groove (**16, 16'**) and the sinterable bonding material (**21**) in said groove;

and then finish-sintering said sub-assembly while shrinking the substrate and the sinterable bonding material to securely hold the connection wire in said groove by clamping of the wire between the groove walls upon shrinkage of the substrate and the bonding material.

4,524,039

MOULDING OF CONSTRUCTION PRODUCTS

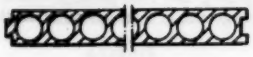
Christopher G. Bevan, London, England, assignor to C. G. Bevan Associates Limited, London, England

Continuation of Ser. No. 212,707, Nov. 5, 1980, abandoned. This application Sep. 17, 1982, Ser. No. 419,133

Claims priority, application United Kingdom, Mar. 5, 1979, 7907611

Int. Cl.³ B06B *3/00*

U.S. Cl. 264—71 **17 Claims**



1. A method of manufacturing construction products comprising the steps of feeding dry or substantially dry constituents including a liquid-setting powder and a reinforcement therefor into a molding zone, vibrating at least a part of said mold to effect compacting of the constituents in such molding zone to such a degree that said constituents will stand and be self-sustaining upon removal of an upstanding portion of the mold, removing at least a portion of the mold from contact from said compacted constituents, thereby exposing at least one upstanding surface of the compacted constituents, and applying to substantially the full extent of said surface a quantity of setting liquid, said quantity being sufficient to wet all of the compacted constituents in the molding zone so as to initiate a chemical setting reaction but not sufficient to completely saturate the compacted constituents and to cause the associated effect to structural collapse of the compacted constituents in the region of said exposed surface.

4,524,040

PROCESS FOR MAKING COATED GLASS FIBER REINFORCED COMPOSITES

William L. Hergenrother, Akron, Ohio, assignor to The Firestone Tire & Rubber Company, Akron, Ohio

Filed Aug. 4, 1983, Ser. No. 520,388

Int. Cl.³ B32B *9/00;* **B05D** *3/02;* **B29G** *5/00;* **D04H** *1/58*

U.S. Cl. 264—136 **12 Claims**

1. Process for forming a glass fiber reinforced composite having a high flexural strength to density ratio and having resistance to strength loss incident to exposure to water, said process comprising the steps of

(a) forming a maleic anhydride adduct of 1,2-polybutadiene by reacting maleic anhydride with 1,2-polybutadiene having a number average molecular weight of more than 10,000 and a crystallinity ranging from 0% to 50%, said reaction being carried out under an inert atmosphere at a temperature ranging from about 150° C. to about 260° C. and in the absence of a free radical initiator, the weight ratio of polybutadiene to maleic anhydride ranging from about 100:1 to 1.5:1;

(b) dissolving the adduct in powder form in an organic solvent;

(c) coating glass fibers with the solution produced in step (b) utilizing from about 0.1 grams to about 6 grams of adduct per hundred grams of glass fibers;

(d) evaporating the solvent to provide glass fibers size coated with adduct;

(e) admixing the size coated glass fibers with unsaturated thermosetting resin and curing agent, the size coated glass fibers being present in an amount ranging from about 20% to about 70% by weight of the admixture;

(f) curing to form a composite.

4,524,041
PROCESSES FOR PREPARING THERMOSTABLE FIBERS AND FILAMENTS

Walter Fester, Königstein, and Bernd Huber, Kelheim, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

Filed Mar. 7, 1983, Ser. No. 473,050
Claims priority, application Fed. Rep. of Germany, Mar. 18, 1982, 3209795
Int. Cl.³ D01F *6/18, 6/00*
U.S. Cl. 264—182 **10 Claims**

1. A process for preparing N,N-dimethylformamide-insoluble acrylic fibers and filaments having increased thermostability, comprising the steps of:

obtaining filament bundles or tows by means of wet- or dry-spinning of a solution of polymer which contains more than 50% by weight of acrylonitrile units,

continuously treating the filament bundles or tows with an aqueous solution containing copper (I) ions during the fiber production process, while fresh from the wet-spinning process or while still containing solvent from the dry-spinning process, and before the first drying stage or a first heat treatment above 100° C. so that absorption of copper (I) ions by the filament bundles or tows takes place within seconds,

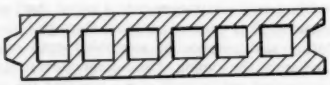
fixing the copper content in the thus-treated bundle or tow, concurrent or subsequent to the treatment, by means of heating to a temperature above about 60° C., and

heating the thus fixed copper containing filament bundles or tows to a temperature of 200° to 350° C. during or after the drying stage.

4,524,042
PROCESS FOR PRODUCING HYDRAULICALLY SETTING EXTRUDING MATERIALS

Tsuneo Genba; Akio Mizobe, and Masaki Okazaki, all of Okayama, Japan, assignors to Kuraray Co., Ltd., Kurashiki, Japan

Filed Jul. 20, 1983, Ser. No. 515,545
Claims priority, application Japan, Aug. 9, 1982, 57-138996
Int. Cl.³ D02G *1/20*
U.S. Cl. 264—211 **10 Claims**



1. A process for producing hydraulically setting materials which is characterized by dispersing in said material as a reinforcing fiber collected yarns which are obtained by fixing polyvinyl alcohol fibers with a water-soluble collecting agent to 200–10,000 denier and cutting said fibers so that the aspect ratio of the single fiber unit is 50–700, and 60% or more of which is split into single fibers during extrusion.

4,524,043
PROCESS FOR THE MANUFACTURE OF PRODUCTS FROM REINFORCED POLYESTER RESINS

John R. McDougal, 7043 Strout Rd., Morrow, Ohio 45152

Continuation-in-part of Ser. No. 441,385, Nov. 12, 1982, abandoned, and Ser. No. 510,596, Jul. 5, 1983,. This application Feb. 21, 1984, Ser. No. 587,319
Int. Cl.³ B29G *1/00*
U.S. Cl. 264—320 **11 Claims**

1. A process for the manufacture of a molded, reinforced polyester resin polymeric product comprising the steps of:

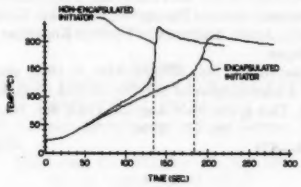
(a) forming by intensively mixing a ready-to-mold resin and reinforcement composite of an unsaturated polyester resin reactant, a cross-linking monomer, reinforcing material, and microcapsules of from 5 to 200 microns in diameter containing a liquid phase including an initiator for cross-linking of the polyester resin reactant and the monomer, said microcapsules isolating said initiator from said resin until a predetermined elevated temperature of at least about 180° C. is reached in the process;

(b) aging said composite until a control viscosity of at least 60,000,000 centipoises at 22° C. is reached;

(c) introducing a predetermined amount of said composite into a cavity of a mold;

(d) applying heat and pressure to said composite to fill said mold cavity uniformly with mixture prior to any significant initiator-induced cross-linking during a first portion of the molding cycle;

(e) causing said microcapsules to release said initiator at said predetermined elevated temperature by using the vapor pressure of the liquid phase within the microcapsules, and thereby terminating said first portion of the molding cycle and commencing a second exothermic portion of the molding cycle, said microcapsules having a wall thickness



and strength sufficient to withstand the vapor pressure of said liquid phase up to the internal pressure developed in the microcapsules at said predetermined elevated temperature;

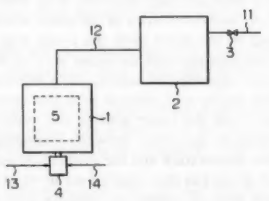
(f) effecting substantially all initiator-induced cross-linking during said second exothermic portion of the molding cycle whereby said first portion of said molding cycle is substantially prolonged by maintaining said initiator in said microcapsules and the prolongation of the first portion of said molding cycle permits the use of increased molding temperatures and a net reduction in the overall molding cycle as compared with the use of such initiator in the composite in a conventional nonencapsulated form; and

(g) removing the cured composite from said mold cavity to provide said polymeric product.

4,524,044
REACTION INJECTION MOLDING METHOD

Masao Nishiyama; Keiichiro Katada, and Yoshiteru Akimoto, all of Hirakata, Japan, assignors to UBE Industries, Ltd., Yamaguchi, Japan

Filed Sep. 16, 1983, Ser. No. 533,274
Claims priority, application Japan, Sep. 30, 1982, 57-169728
Int. Cl.³ B29F *1/00*
U.S. Cl. 264—328.6 **7 Claims**



1. A process for forming a molded article by reaction injection molding, comprising the steps of:

pressurizing a mold cavity by filling the cavity with an inert gas at a pressure in the range of 0.5 to 20 kg/cm²·G;

injecting into said pressurized cavity starting material capable of reacting to form a polymerized material, the injection of said starting material compressing said gas to increase the pressure within said cavity to a given value; and

after injection of said starting material, raising the pressure of the gas within said cavity to an elevated value higher than said given value, and maintaining the pressure within said cavity at said elevated value until the polymerization molding of the starting material is completed.

4,524,045

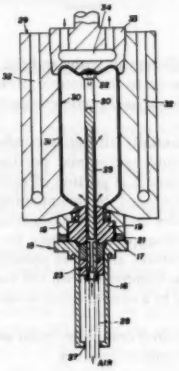
METHOD OF FABRICATING BOTTLE-SHAPED CONTAINER OF SATURATED POLYESTER

Yoshiaki Hayashi; Kouichi Haraguchi, and Yukio Koshidaka, all of Matsudo, Japan, assignors to Yoshino Kogyosho Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 240,916, Mar. 5, 1981, abandoned, which is a continuation of Ser. No. 64,813, Aug. 8, 1979, abandoned. This application Aug. 24, 1983, Ser. No. 525,804

Int. Cl.³ B29C *17/07*

U.S. Cl. 264—521 **11 Claims**



1. A method of fabricating a bottle-shaped container of saturated polyester from a preformed cylindrical piece of polyethylene terephthalate with a bottom, comprising:

heating the piece to a temperature for orienting,

loading the heated piece into the blowing mold which is heated at a temperature in the range between the glass transition temperature and the orientation temperature of the saturated polyester,

biaxially orienting the piece by longitudinally orienting the piece and then laterally orienting it by introducing compressed air into the interior of the piece while said piece is contained in the mold until the outer wall of the piece comes into contact with the inner wall of the mold;

the container expanded by said biaxially orienting step being thermally set by said contact with the outer wall of the container with the inner wall of the mold retained at a temperature in the range between substantially the glass transition temperature and the orientation temperature for a period of time in the range of six to eight seconds;

opening the mold to unload and rapidly cool the container thus molded;

said mold having a capacity upwardly adjusted by about 6% relative to the desired final capacity of said container, said blowing mold temperature being in the range of about 70° C. to less than about 80° C.

4,524,046

METHOD FOR MANUFACTURING A CAM-CAM SHAFT ASSEMBLY

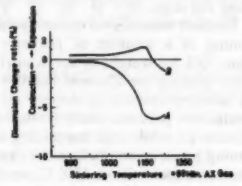
Tetsuya Suganuma, Nagoya; Koji Kazuoka, Toyota; Shuichi Fujita, Toyota; Yoshitaka Takahashi, Toyota; Katsuhiko Ueda, Aichi, and Hitoshi Nakamura, Toyota, all of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Continuation of Ser. No. 393,673, Jun. 30, 1982,. This application Apr. 16, 1984, Ser. No. 599,605

Claims priority, application Japan, Jul. 1, 1981, 56-102446

Int. Cl.³ B22F *5/00, 7/08*

U.S. Cl. 419—8 **12 Claims**



1. A method for manufacturing a cam-cam shaft assembly, which comprises the steps of:

(a) molding a component having a through-hole therein from an alloy material to be sintered, said material exhibiting a ratio of contraction of an inner diameter of said component at a joining portion when the component is sintered alone to said inner diameter thereof before sintering to be more than 2%;

(b) presintering said component;

(c) assembling said component onto a metal shaft such that said metal shaft is inserted into said through-hole; and

(d) sintering said component assembled onto said metal shaft, whereby the joining of said component to said metal shaft is carried out in such a manner that the apparent interference is more than 2%.

4,524,047

THERMIONIC DETECTOR WITH MULTIPLE LAYERED IONIZATION SOURCE

Paul L. Patterson, 2212 Brampton Rd., Walnut Creek, Calif. 94598

Filed Mar. 2, 1983, Ser. No. 471,282

Int. Cl.³ G01N *27/62*

U.S. Cl. 422—98 **10 Claims**

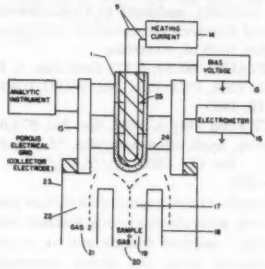
1. An apparatus for thermionic ionization detection of chemical substances in a gaseous environment, the apparatus comprising, in combination:

a thermionic source having a surface and comprising a metallic heater element capable of withstanding operating temperatures up to about 1000° C.; a first coating layer covering said heater element, said first coating layer comprising a hardened ceramic cement material impregnated with a metallic compound additive which is non-corrosive to said heater element at operating temperatures up to about 1000° C. and wherein said metallic compound additive has an electric conductivity greater than said ceramic cement material; a second coating layer covering said first coating layer, said second coating comprising a hardened ceramic cement material impregnated with an alkali metal compound, said second coating layer being molded onto

said first coating layer in such manner that there is no direct contact of said second coating layer with said heater element, and all materials used in said firsat and second coating layers being capable of withstanding operating temperatures up to about 1000° C.;

a metallic collector electrode structure adjacent to said thermionic source and means for spacing said collector electrode structure from said surface of said thermionic source, said spacing means defining a gaseous environment test site, between said surface of said thermionic source and said collector electrode structure, within which chemical substances to be detected may be present;

means for supplying an electrical current to said heater element for the purpose of heating said thermionic source to operating temperatures in the range of from about 100° C. to about 1000° C.;



means for transferring a gaseous test sample suspected of containing chemical substances which are to be detected to said test site about said thermionic source whereby these chemical substances form gas phase ions by a process of electrical charge emission from said surface of said thermionic source; and

means for applying a bias voltage to said heater element to cause a difference in electrical potential between said thermionic source and said collector electrode, the difference in electrical potential causing the gas phase ions to move toward said collector electrode, and causing a migration of electrical charge from said heater element through said first coating layer and said second coating layer to replace charge emitted from said surface of said thermionic source.

4,524,048

APPARATUS FOR COMPACTING BIOINJURIOUS WASTES

Gerhard Schmidt, Linsengericht, and Walter Kohlpoth, Offenbach, both of Fed. Rep. of Germany, assignors to Nukem GmbH, Hanau, Fed. Rep. of Germany

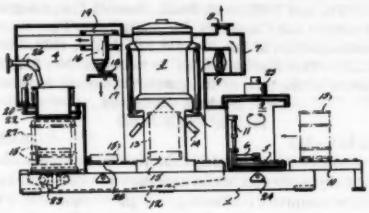
Filed Nov. 23, 1982, Ser. No. 443,892

Claims priority, application Fed. Rep. of Germany, Nov. 25, 1981, 3146592

Int. Cl.³ G21F *9/34, 9/36*

U.S. Cl. 422—159 **17 Claims**

1. An apparatus for compacting solid bioinjurious waste in closed containers comprising in combination a closed containment means having roller conveyor means, a container receiving means which is rotatable about a vertical axis, a high pressure press, a container discharge lock means with a receiving chamber, a first hydraulic cylinder means within said receiving means for transporting the container into the high pressure press and said receiving means being provided with a second liftable hydraulic cylinder means lying under the roller conveying means when located in one position and, when lifted to a second position, extendable in the direction of said high pressure press to eject the shaped container from the high pressure press, and a movable gripping means for engaging and



moving the shaped container to the container discharge lock means.

4,524,049

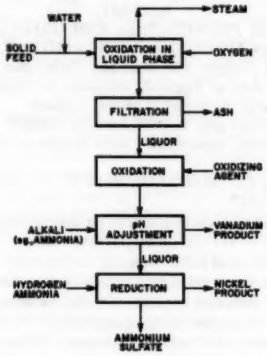
PROCESS FOR CONCURRENT STEAM GENERATION AND METAL RECOVERY

Song-P. Sit, Calgary, Canada, assignor to Zimpro Inc., Rothschild, Wis.

Filed Aug. 31, 1983, Ser. No. 528,269

Int. Cl.³ C01G *31/02, 53/00*

U.S. Cl. 423—65 **18 Claims**



16. A process for concurrent steam generation and the recovery of vanadium and nickel from fly ash, comprising the steps of:

(a) slurrying said fly ash and elemental sulphur in water and subjecting said slurry to temperatures of 500° to 650° F. and pressures of 1000 to 4000 psig in the presence of air or oxygen within a wet oxidation reactor;

(b) regulating the addition of elemental sulphur to said slurry of fly ash to result in a pH value of 0.2–0.3 within said reactor;

(c) discharging off-gases from the reactor at elevated pressure and temperature to a heat exchanger to generate steam;

(d) withdrawing oxidized slurry from said reactor and removing suspended solids therefrom by filtration to produce a filtrate containing vanadium and nickel compounds;

(e) adding sodium perchlorate to said filtrate to oxidize vanadium oxides to the pentoxide state;

(f) adding ammonia to oxidized filtrate to achieve pH about 2 to precipitate vanadium pentoxide; and

(g) filtering precipitated vanadium pentoxide from ammonia adjusted oxidized filtrate.

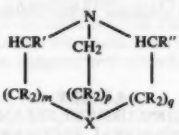
4,524,050

CATALYTIC HYDROLYSIS OF CARBONYL SULFIDE

Michael S. Chen, Zionsville; Thomas J. Edwards, Allentown, both of Pa., and William R. Ernst, Roswell, Ga., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Continuation-in-part of Ser. No. 456,222, Jan. 7, 1983, Pat. No. 4,482,529. This application Jul. 8, 1983, Ser. No. 512,288
The portion of the term of this patent subsequent to Nov. 13, 2001, has been disclaimed.
Int. Cl.³ C01B *17/00*
U.S. Cl. 423—243 18 Claims

1. A process for hydrolyzing COS present in a gas stream to H_2S and CO_2 under conditions necessary to effect said hydrolysis which comprises contacting said gas stream with a bicyclo tertiary amine catalyst having the general formula:



wherein X represents H—C or N; R and R' represent H, CH_3— or C_2H_5—; R'' represents H or CH_3— only if R' is not C_2H_5; and m, p and q≧1.

4,524,051

CATALYST PREPARATION AND OXIDATION OF CARBON MONOXIDE WITH SAID CATALYST

Christopher J. Wright, Abingdon, and Christopher F. Sampson, Newbury, both of England, assignors to United Kingdom Atomic Energy Authority, London, England

Filed Jan. 9, 1984, Ser. No. 569,030
Claims priority, application United Kingdom, Jan. 10, 1983, 8300554
Int. Cl.³ B01D *53/36;* B01J *23/14, 23/62*
U.S. Cl. 423—247 5 Claims

1. A method of preparing a catalyst comprising providing a substrate with tin (IV) oxide support material and with catalytically active material comprising a precious metal wherein the tin (IV) oxide is provided by contacting the substrate with a dispersion of colloidal or non-colloidal particles in a liquid medium, said dispersion being convertible to tin (IV) oxide by drying and firing, followed by drying and firing.

5. A method for the catalytic oxidation of carbon monoxide comprising contacting carbon monoxide with a catalyst as claimed in claim 1.

4,524,052

BORATE CHLORIDE POLYMERIZATION CATALYSTS

Daniel F. Graves, Clinton, Ohio, assignor to The Firestone Tire & Rubber Company, Akron, Ohio

Filed Dec. 24, 1984, Ser. No. 685,582
Int. Cl.³ C01B *33/20, 25/10*
U.S. Cl. 423—277 8 Claims

1. A compound described by the molecular formula: $BNP_2O_2X_6$, wherein X is selected from the group consisting of F, Cl, Br, I and mixtures thereof.

6. A process for the manufacture of catalytically active compounds which comprises reacting in a halogenated solvent a compound of the formula $X_2P(O)NHP(O)X_2$ with a compound of the formula BX_3, wherein X is selected from the class consisting of F, Cl, Br, I and mixtures thereof.

7. A process for the polymerization of halophosphazene trimers which comprises reacting a halophosphazene trimer in the presence of a catalytically effective amount of a catalyst represented by the formula $BNP_2O_2X_6$, wherein X is selected from the class consisting of F, Cl, Br, I and mixtures thereof.

4,524,053

PROCESS FOR PREPARING CORES AND MOLDS

Charles E. Seeney, Brazil, Ind., assignor to International Minerals & Chemical Corp., Terre Haute, Ind.

Division of Ser. No. 342,308, Jan. 25, 1982, Pat. No. 4,390,370. This application Nov. 12, 1982, Ser. No. 440,918
Int. Cl.³ C01B *25/36*
U.S. Cl. 423—306 3 Claims

1. A composition obtained by reacting phosphoric acid with olivine in a ratio of about 3–5:1 by weight at a temperature of about 70°–100° C. for a period of two hours or more.

4,524,054

PROCESS FOR THE PRODUCTION OF DICALCIUM PHOSPHATE

Christopher W. George, Brighton; Hari N. Sinha, Surrey Hills; Mary R. Vujcich, Albert Park, and Graham S. Walker, Brighton, all of Australia, assignors to Commonwealth Scientific and Industrial Research Organization and Queensland Phosphate Limited, both of, Australia

PCT No. PCT/AU83/00054, § 371 Date Jan. 5, 1984, § 102(e) Date Jan. 5, 1984, PCT Pub. No. WO83/03818, PCT Pub. Date Nov. 10, 1983
PCT Filed May 4, 1983, Ser. No. 574,097
Claims priority, application Australia, May 5, 1982, PF3855
Int. Cl.³ C01B *15/16, 25/26*
U.S. Cl. 423—308 10 Claims

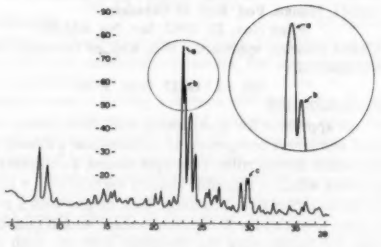
1. In a process for the recovery of dicalcium phosphate from a phosphate ore, wherein the ore is leached with a mixture comprising water, sulphur dioxide and an organic carbonyl compound selected from the group comprising acetone, methyl ethyl ketone or methyl isobutyl ketone, cyclohexanone, acetaldehyde, formaldehyde and benzaldehyde; the leach liquor contains dissolved phosphate and calcium hydroxysulphonate and is separated from any gangue and other insoluble material; the improvement which comprises carrying out the leaching at a temperature in the range of from 10° to 40° C. and selecting the sulphur dioxide and carbonyl compound concentration such that substantially no calcium hydroxysulphonate is precipitated at the leaching stage; and treating the leach liquor to recover therefrom a dicalcium phosphate product and at least part of the sulphur dioxide and the carbonyl compound.

4,524,055

CRYSTALLINE ALUMINOSILICATE ZEOLITE AND PROCESS FOR PRODUCTION THEREOF

Tamio Onodera; Tokuji Sakai; Yasuo Yamasaki, and Koji Sumitani, all of Matsuyama, Japan, assignors to Teijin Petrochemical Industries Ltd., Tokyo, Japan

Filed Feb. 22, 1983, Ser. No. 468,381
Claims priority, application Japan, Feb. 22, 1982, 57-26000
Int. Cl.³ C01B *33/28;* B01J *29/28*
U.S. Cl. 423—328 9 Claims



1. A crystalline aluminosilicate zeolite characterized by having

(a) a silica/alumina mole ratio in the range of from 10 to 100,

(b) X-ray lattice distances d shown in Table A in the specification,

(c) a (cyclohexane/n-hexane) adsorption ratio of at least 0.7, and

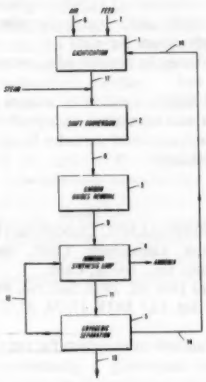
(d) when the intensity (I_o) of the X-ray diffraction peak at d(Å)=3.86 is taken as 100, the relative intensity (I/I_o) of the X-ray diffraction peak d(Å)=3.83 is at least 75.

7. The process of claim 6 wherein the alkali metal hydroxide is sodium hydroxide.

4,524,056
PROCESS FOR THE PRODUCTION OF AMMONIA

David Banquy, Paris, France, assignor to Foster Wheeler Energy Corporation, Livingston, N.J.

Filed Jul. 5, 1983, Ser. No. 510,790
Int. Cl.³ C01C 1/04
U.S. Cl. 423—359 9 Claims



1. A process for producing ammonia from a carbon containing feedstock comprising:

(a) subjecting said feedstock to a catalyst free partial oxidation reaction with air as the only source of free oxygen in a reactor operating adiabatically, at a temperature between 800° C. and 1700° C., thereby producing a raw synthesis gas containing hydrogen, carbon oxides, methane, and nitrogen, with a methane content of less than 10 mole percent on a dry basis and a molal ratio of $(H_2+CO)/N_2$ of 0.7 to 2.4;

(b) subjecting said raw synthesis gas to a shift conversion reaction to convert essentially all the carbon monoxide contained therein to carbon dioxide and hydrogen;

(c) subjecting the shift converted raw synthesis gas to a purification for removing the carbon oxides and the sulfur compounds from said gas, thereby obtaining a purified synthesis gas containing a molal ratio of H_2/N_2 of less than 2.4;

(d) injecting said purified synthesis gas having a molal ratio of H_2/N_2 of less than 2.4 into an ammonia synthesis loop to produce ammonia and recovering said ammonia from the loop;

(e) extracting a purge gas from said ammonia synthesis loop, and treating said purge gas to obtain a hydrogen-rich stream, a nitrogen-rich stream, and a methane-rich stream;

(f) recycling said hydrogen-rich stream to said ammonia synthesis loop; and

(g) recycling at least partially said methane-rich stream to processing step (a).

4,524,057
PRODUCTION OF CONCENTRATED PHOSPHORIC ACID AND HEMIHYDRATED CALCIUM SULFATE

Bernard Bigot, La Londe, France, assignor to Rhone-Poulenc Industries, Paris, France

Continuation of Ser. No. 371,943, Apr. 26, 1984, abandoned, which is a continuation of Ser. No. 961,282, Nov. 16, 1978, abandoned. This application Apr. 13, 1984, Ser. No. 600,154
Claims priority, application France, Nov. 16, 1977, 77 34395
Int. Cl.³ C01B 25/16
U.S. Cl. 423—555 21 Claims

1. In a process for the direct production of concentrated phosphoric acid and calcium sulfate hemihydrate by sulfuric acid attack upon calcium phosphate, the improvements comprising (i) continuously conducting the acid attack reaction, with concomitant formation of crystalline calcium sulfate hemihydrate, in but a single, homogeneous liquid reaction medium comprising the products of reaction, (ii) maintaining constant the temperature of the reaction medium as to effect formation of hemihydrated calcium sulfate, (iii) controlling the amount of reactants introduced to the reaction such as to maintain essentially constant, in liquid phase, a solids content of between 25 and 50% by weight and a determined sulfate ion content ranging from 5 g/l to 20 g/l with said determined sulfate ion content being inversely proportional for a given temperature with the P_2O_5 concentration which ranges between 55% and 40% by weight, such that said determined sulfate ion content ranges from 5 g/l to 20 g/l for a P_2O_5 concentration of about 40% with the temperature of the reaction medium being about 100° C., from about 5 g/l to 16 g/l for a P_2O_5 concentration of about 45% with the temperature of the reaction medium being about 95° C., from about 5 g/l to about 14 g/l for a P_2O_5 concentration of about 50% with the temperature of the reaction medium being about 90° C., and from 5 g/l to 12 g/l for a P_2O_5 concentration of about 55% with the temperature of the reaction medium being about 85° C., and (iv) withdrawing a fraction of reaction effluent, including the concentrated phosphoric acid, and individually separating and recovering hemihydrated calcium sulfate from said reaction effluent fraction upon cooling the effluent fraction to a temperature sufficient to insure yielding a hemihydrate stable enough to be transferred and washed without hydration.

4,524,058
PROCESS FOR THE PREPARATION OF A HYDROGEN-RICH GAS

Pierre E. Dejaifve, and Gerard Quillaud, both of Grand-Couronne, France, assignors to Shell Oil Company, Houston, Tex.

Filed Oct. 18, 1984, Ser. No. 662,462
Claims priority, application France, Nov. 7, 1983, 83 17645
Int. Cl.³ C01B 2/10
U.S. Cl. 423—656 11 Claims

1. A process for the preparation of a hydrogen-rich gas by reacting a carbon monoxide-containing gas with stream under suitable conditions in the presence of a catalyst, wherein said catalyst comprises a spinel having the formula $Li_xCu(1-x)Fe_5O_8$ in which $0<x1$.

4,524,059
FATTY ACID ANALOGS

David R. Elmaleh, Newton Center, and Eli Livni, Brookline, both of Mass., assignors to The General Hospital Corporation, Boston, Mass.

Filed Jan. 28, 1983, Ser. No. 461,734
Int. Cl.³ A61K 49/00, 43/00
U.S. Cl. 424—1.1 44 Claims

1. A radioactively labeled analog of a fatty acid,

said analog being capable of being taken up by mammalian tissue,

said analog exhibiting an in vivo beta-oxidation rate below that of the corresponding radioactively labeled fatty acid.

4,524,060

SLOW RELEASE PHARMACEUTICAL COMPOSITION

Ahmed S. Mughal, High Wycombe, and David S. Holmes, Reading, both of England, assignors to John Wyeth & Brother Limited, Maidenhead, England

Continuation-in-part of Ser. No. 375,935, May 7, 1982,. This application Oct. 28, 1983, Ser. No. 546,684

Claims priority, application United Kingdom, May 21, 1981, 8115678

Int. Cl.³ A61K *9/28, 9/52*

U.S. Cl. 424—19 12 Claims

1. A pharmaceutical composition in capsule form comprising a plurality of sustained release pellets each containing about 50 to 90% by weight of a mixture of micronised indoramin or a pharmaceutically acceptable salt thereof, about 4 to 25% by weight of microcrystalline cellulose as a hydrophilic long chain polymer, about 0.5 to 10% by weight of a wetting agent and about 1 to 10% by weight of a disintegrant other than microcrystalline cellulose, the mixture being in the form of a non-compressed pellet and having an enteric coat or a sustained release coat permeable to gastro-intestinal juices, the indoramin having a particle size where 90% of the particles are less than or equal to 15μ, the ratio of indoramin to hydrophilic long chain polymer being about 30:1 to about 2:1 and the ratio of indoramin to wetting agent being about 300:1 to about 5:1 so as to allow at least about 80% release of indoramin into gastro-intestinal media within about 24 hours.

4,524,061

POLYMERIC SUNSCREENS

James R. Cho, Oakland, and Stephen C. Johnson, Newton, both of N.J., assignors to GAF Corporation, Wayne, N.J.

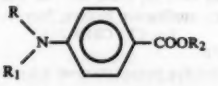
Filed Apr. 22, 1983, Ser. No. 487,484

Int. Cl.³ A61K *7/44;* C08F *226/08*

U.S. Cl. 424—60 13 Claims

1. The polymer consisting essentially of the monomers:

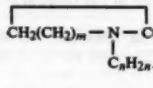
(a) 10 to 50 wt. % of a p-amino-alkenylbenzoate having the formula



wherein R is hydrogen or lower alkyl, R_1 is hydrogen or lower alkyl and R_2 is a vinyl or allyl radical;

(b) 5 to 6 wt. % of N-vinylpyrrolidone;

(c) 20 to 80 wt. % of a monomer selected from the group consisting of an acrylate or methacrylate having 5 to 24 carbon atoms or a lactam having the formula



wherein m has a value of 3 to 5 and n has a value of 2 to 4; and mixtures thereof; and optionally containing

(d) 0 to 40 wt. % of acrylic or methacrylic acid based on the total of monomers (a), (b) and (c).

4,524,062

ANTIPERSPIRANT/DEODORANT STICK COMPOSITIONS

Dennis Laba, Middlesex; John J. Margres, Jr., Old Bridge, and Kristin Burkhardt, Union, all of N.J., assignors to Armour Pharmaceutical Company, Tuckahoe, N.Y.

Filed Feb. 22, 1983, Ser. No. 468,431

Int. Cl.³ A61K *7/32, 7/34, 7/38*

U.S. Cl. 424—65 10 Claims

1. A deodorant-antiperspirant stick composition comprising

a, 5 to 25 weight percent of an antiperspirant agent of solid particles selected from the group consisting of aluminum halide, aluminum hydroxyhalide, zirconyl oxyhalide, zirconyl hydroxyhalide and zirconium aluminum glycine complex;

b, 4 to 25 weight percent glycol stearate enrobing the solid particles of said antiperspirant agent and thereby forming coated antiperspirant particles;

c, q.s. to 100 weight percent with a cologne stick base comprising the mixture of

(1) 10 to 25 weight percent of a deodorant selected from the group consisting of sodium aluminum chlorhydroxy lactate, 5-chloro-2-(2,4-dichlorophenoxy)phenol, 3,4,4-trichlorocarbanilide, cetyl pyridinium chloride and sodium aluminum lactate,

(2) 25 to 40 weight percent of a cosmetically acceptable alcohol, and

(3) 3 to 15 weight percent of sodium stearate as gelling agent for said deodorant and alcohol mixture;

said coated antiperspirant particles being suspended in said cologne stick base.

4,524,063

OPHTHALMIC COMPOSITIONS

Larry A. Wheeler, Cucamonga, Calif., assignor to Allergan Pharmaceuticals, Inc., Irvine, Calif.

Filed Dec. 22, 1983, Ser. No. 564,156

Int. Cl.³ A61K *31/74, 31/275*

U.S. Cl. 424;78 4 Claims

1. A pharmaceutical composition for the treatment of ocular allergic diseases containing a pharmaceutically acceptable ophthalmic vehicle comprising from about 1.0% to about 5.0% polyvinyl alcohol and from about 1.0% to about 10.0% lodoxamide tromethamine in an aqueous solution.

4,524,064

WOUND-COVERING MATERIALS

Masao Nambu, Yokohama, Japan, assignor to Nippon Oil Company, Limited, Tokyo, Japan

Filed May 24, 1983, Ser. No. 497,664

Claims priority, application Japan, May 26, 1982, 57-87979

Int. Cl.³ A61K *31/74, 31/78*

U.S. Cl. 424—81 5 Claims

1. A process of treating a burn comprising applying to the surface of the burn a water-insoluble gel produced by applying an aqueous solution containing a polyvinyl alcohol with a degree of hydrolysis not less than 95 mol.% and a viscosity-average degree of polymerization not less than 1,500, a water-soluble C_{2-20} polyhydric alcohol having 2–8 hydroxyl groups in the molecule and a high-viscosity water-soluble substance having a viscosity in 2% aqueous solution not lower than 300 cP at 25° C. selected from the group consisting of propyleneglycol ester of alginic acid, tragacanth gum, puleulan, arabia gum, gatty fum, karaya gum, dextrin, starch, Dioscoreaceae mucous substance, mucous Malvaceae, furcellaran, curdlan, methylcellulose, guar gum, locust bean gum, xanthan gum, agar, carrageenan, fucoidin, alginic acid, sodium alginate, alginic acid triethanolamine, pectin, agarose, carboxymethylcellulose, tamarind gum, gelatin, polyacrylic acid, sodium polyacrylate, polymethacrylic acid, polyvinylsulfonic acid, polyvinylpyridine, polyethylenimine, vinylimidazole-itaconic acid copolymer, poly (2,4-pentadiene-1-ol) and poly (N-vinyl-

2-pyrrolidone), concentrations of said polyvinyl alcohol, said water-soluble polyhydric alcohol and said water-soluble high viscosity substance being adjusted respectively to 1.5–8% by weight, 10–85% by weight and 0.2–15% by weight, onto a flat or curved plate having 30,000–200,000 projections per m^2, the total area occupied by the projections being 10–70% to a thickness from 0.5 to 5 mm, cooling the applied plate to a temperature not higher than −6° C. to solidify the solution and then subjecting the resulting mass to vacuum dehydration to a ratio of dehydration from 5% by weight to 95% by weight.

4,524,065

METHOD FOR THE PREVENTION AND TREATMENT OF SCARS WITH ENZYMES

Sheldon R. Pinnell, Durham, N.C., assignor to Bio-Specifics N.V., Curacao, Netherlands Antilles

Filed Aug. 4, 1983, Ser. No. 520,203

Int. Cl.³ A61K *37/48*

U.S. Cl. 424—94 **24 Claims**

1. A method for the dissolution of mammalian cicatrices which comprises administering an effective amount of the enzyme collagenase directly into the lesion.

12. A method for the dissolution of mammalian cicatrices which comprises administering an effective amount of the enzyme collagenase in combination with an effective amount of the enzyme hyaluronidase directly into the lesion.

4,524,066

PROCESS FOR THE PREPARATION OF INJECTABLE CHONDROITIN POLYSULFATE

Karl H. Wolf, Munich, Fed. Rep. of Germany, assignor to Luitpold-Werk Chemisch-pharmazeutische Fabrik, Munich, Fed. Rep. of Germany

Filed Apr. 29, 1982, Ser. No. 373,226

Claims priority, application Fed. Rep. of Germany, May 11, 1981, 3118588

Int. Cl.³ A61K *31/725*

U.S. Cl. 514—23 **15 Claims**

1. A process for the preparation of an injectable chondroitin polysulfate with a molecular weight up to about 15000 which comprises:

A. oxidatively depolymerizing crude chondroitin polysulfate by treatment with an oxidatively depolymerizing agent selected from the group consisting of

(a) peracetic acid in the presence of salts of heavy metals, and

(b) hydrogen peroxide; and

B. fractionating the oxidatively depolymerized chondroitin polysulfate so produced by a step selected from the group consisting of

(a) precipitation with methanol, ethanol, isopropanol, acetone, tetrahydrofuran or dioxane; and

(b) ultrafiltration.

4,524,067

SOYBEAN SAPONINS, AND A METHOD OF ISOLATING THE SAME

Shigeru Arichi, and Yoshihiro Uchida, both of Osaka, Japan, assignors to Osaka Chemical Laboratory Co., Ltd., Osaka, Japan

Continuation of Ser. No. 194,974, Oct. 8, 1980, abandoned. This application Apr. 21, 1983, Ser. No. 487,096

Claims priority, application Japan, Oct. 29, 1979, 54-140167; Nov. 20, 1979, 54-150938; May 19, 1980, 55-66284

Int. Cl.³ A61K *31/70*; C07H *15/00, 15/24*

U.S. Cl. 514—33 **2 Claims**

1. Substantially pure 3-0-[β-D-glucopyranosyl-(1→2)-β-D-galactopyranosyl-(1→2)β-D-glucuronopyranosyl]-22-0-[β-D-glucopyranosyl-(1→3)-β-L-arabinopyranosyl]-soyasapogenol A(soyasaponin A_1) or substantially pure 3-0-[β-D-galactopyranosyl-(1→2)-β-D-glucuronopyranosyl]-22-0-[β-D-glucopyranosyl-(1→3)-α-L-arabinopyranosyl]-soyasapogenol A (soyasaponin A_2), or non-toxic salt thereof.

2. A composition having antioxidizing and metabolism affecting activity comprising an effective amount of either soyasaponin A_1 or soyasaponin A_2 and a carrier.

4,524,068

CYCLODEXTRIN INCLUSION COMPLEX OF PIPERONYL BUTOXIDE

József Szejtli; Zsuzsanna Budai; Erzsébet Radvány née Hegedüs; László Papp; György Körmöczy, and Gabriella Pap née Imrényi, all of Budapest, Hungary, assignors to Chinoin Gyogyszer es Vegyeszeti Termekek Gyara Rt., Budapest, Hungary

Filed Nov. 9, 1983, Ser. No. 550,478

Claims priority, application Hungary, Nov. 9, 1982, 3597/82

Int. Cl.³ A61K *31/73*

U.S. Cl. 514—58 **4 Claims**

1. An inclusion complex of piperonyl butoxide and cyclodextrin, wherein the piperonyl butoxide is present in an amount of 0.6 to 1.5 moles relative to 1 mole of cyclodextrin.

4,524,069

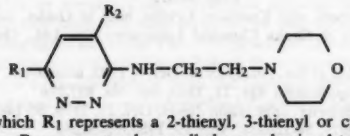
Patent Not Issued For This Number

4,524,070
AMINATED DERIVATIVES OF PYRIDAZINE SUBSTITUTED IN 6 POSITION BY A HETEROCYCLE OR AN ALICYCLE AND COMPOSITIONS, SAID DERIVATIVES BEING ACTIVE ON THE CENTRAL NERVOUS SYSTEM

Jean-Paul Kan; Kathleen Biziere, both of Clapiers, and Camille-Georges Wermuth, Strasbourg, all of France, assignors to Sanofi, Paris, France

Filed Jan. 18, 1984, Ser. No. 571,698
Claims priority, application France, Jan. 24, 1983, 83 01029
Int. Cl.[3] A61K *31/535;* **C07D** *413/12*
U.S. Cl. 514—230 **6 Claims**

1. Aminated derivatives of pyridazine of formula:



(I)

in which R_1 represents a 2-thienyl, 3-thienyl or cyclohexyl group; R_2 represents a lower alkyl group having 1 to 4 carbon atoms, or a hydrogen atom, and acid addition salts thereof.

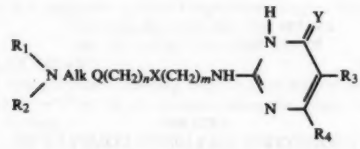
5. A pharmaceutical composition active on the central nervous system comprising a compound of claim 1 and a pharmaceutically acceptable carrier.

4,524,071
PYRIMIDONE DERIVATIVES

Barry J. Price, Hertford; John W. Clitherow, Sawbridgeworth; John Bradshaw, Ware; Michael Martin-Smith, Ware; Duncan B. Judd, Ware, and Roger Hayes, Welwyn, all of England, assignors to Glaxo Group Limited, London, England

Filed Jul. 17, 1979, Ser. No. 58,256
Claims priority, application United Kingdom, Jul. 26, 1978, 31153/78
Int. Cl.[3] C07D *239/244;* **A61K** *31/505*
U.S. Cl. 514—272 **21 Claims**

1. Compounds of the formula (1):



(I)

and physiologically acceptable acid addition salts, and hydrates thereof, in which

R_1 and R_2 which may be the same or different, each represent hydrogen, C_1-C_6 alkyl, C_3-C_8 cycloalkyl, C_3-C_6 alkenyl, C_3-C_6 alkynyl, arC_1-C_6 alkyl or C_1-C_6 alkyl substituted by hydroxy, C_1-C_3 alkoxy, amino, C_1-C_4 alkylamino or di-C_1-C_3 alkylamino or R_1 and R_2 together with the nitrogen atom to which they are attached form a saturated monocyclic 5 to 7 membered heterocyclic ring which may contain the further heterofunction —O—;

Alk represents a straight alkylene chain of 1 to 4 carbon atoms;

Q represents a benzene ring in which incorporation into the rest of the molecule is through bonds at the 1- and 3- or 1- and 4-positions;

X represents $—CH_2—$, —O— or —S—;

n represents zero or 1;

m represents 2, 3 or 4;

Y represents =0 or =S;

R_3 represents hydrogen in which case R_4 represents methyl or R_3 represents—$(CH_2)_p$—V$(CH_2)_q$Ar, phenyl or C_1–C_6 alkyl in which case R_4 represents hydrogen;

V represents $—CH_2—$, —O— or —S—;

p represents zero, 1, 2 or 3;

q represents zero, 1, 2 or 3; the sum of p+q being 3 or less;

Ar represents phenyl, substituted phenyl which is substituted by one or more substituents selected from the group consisting of C_{1-3} alkyl, C_{1-2} alkoxy C_{1-3} alkyl, hydroxy, C_{1-3} alkoxy, methylenedioxy, halogen, trifluoromethyl and di-C_{1-3}-alkylamino; naphthyl, pyridyl, furanyl, thienyl, thiazolyl, oxazolyl, indolyl, quinolyl or isoquinolyl.

4,524,072
REDUCTION OF STROKE DAMAGE

Justin A. Zivin, 31 Camp St., Paxton, Mass. 01612

Filed Jun. 18, 1984, Ser. No. 621,501
Int. Cl.[3] A61K *31/445, 31/485*
U.S. Cl. 514—280 **11 Claims**

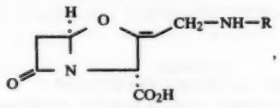
1. A method of reducing stroke-induced neurological damage in a human patient comprising administering to said human patient an effective amount of a pharmaceutically acceptable neurological-damage-reducing serotonin antagonist said serotonin antagonist being selected from 2-bromo-lysergic acid diethylamide, lycergic acid diethylamide, and cyproheptadine.

4,524,073
β-LACTAM COMPOUNDS

Irene Stirling, Reigate; Gordon Bruton, Croydon; Stephen H. Calvert, Guildford, and Brian P. Clarke, Kingswood, all of England, assignors to Beecham Group p.l.c., England

Filed Jul. 20, 1983, Ser. No. 516,121
Claims priority, application United Kingdom, Jul. 22, 1982, 8221162; Dec. 15, 1982, 8235692
Int. Cl.[3] A61K *31/44, 31/42, 31/43;* **C07D** *499/32, 498/10*
U.S. Cl. 514—80 **46 Claims**

1. A compound of the formula (I):



(I)

a pharmaceutically acceptable salt thereof or an in-vivo hydrolyzable ester thereof wherein R is alkyl of 2–12 carbon atoms or aralkyl of 2–6 carbon atoms in the alkyl moiety substituted on an alkyl carbon atom other than that adjacent to —NH— group, by 1–3 substituents selected from the group consisting of halo; non-aromatic heterocyclyl of 4–7 ring atoms unsubstituted or substituted by up to 3 substituents selected from the group consisting of halo, alkyl of 1–6 carbon atoms, alkoxy of 1–6 carbon atoms, haloalkyl of 1–6 carbon atoms, hydroxy, amino, carboxy, alkoxycarbonyl of 1–6 carbon atoms in the alkoxy moiety, alkoxycarbonylalkyl of 1–6 carbon atoms in the alkoxy moiety and 1–6 carbon atoms in the alkyl moiety, aryl and oxo, said non-aromatic heterocyclyl being linked through carbon; an aromatic heterocyclyl of 4–7 ring atoms unsubstituted or substituted by up to 3 substituents selected from the group consisting of halo, alkyl of 1–6 carbon atoms, alkoxy of 1–6 carbon atoms, haloalkyl of 1–6 carbon atoms, hydroxy, amino, carboxy, alkoxycarbonyl of 1–6 carbon atoms in the alkoxy moiety, alkoxycarbonylalkyl of 1–6 carbon atoms in the alkoxy moiety and 1–6 carbon atoms in the alkyl moiety, aryl and oxo; nitro; oxo; $—OR^1$; SR^1; $—P(O)R^2R^3$; $—NR^4R^5$;

$=NR^6$; and $-S(O)_nR^S$ wherein n is one or two and R^S is hydroxy, hydrocarbyloxy or heterocyclyl of 4–7 ring atoms unsubstituted or substituted by alkyl of 1–6 carbon atoms, a heterocyclyl of 4–7 ring atoms, amino, alkanoylamino of 1–6 carbon atoms in the alkyl moiety, mono-, di- or trialkylamino of 1–6 carbon atoms in each alkyl group, hydroxy, alkoxy of 1–6 carbon atoms, mercapto, alkylthio of 1–6 carbon atoms, heterocyclylthio of 4–7 ring atoms, arylthio, sulphamoyl, carbamoyl, amidino, guanidino, nitro, chloro, bromo, fluoro, carboxy or a salt or ester thereof, alkanoyloxy of 1–6 carbon atoms in the alkyl moiety, arylcarbonyl or heterocyclylcarbonyl of 4–7 ring atoms; or R^S is $-NR^TR^U$ wherein R^T and R^U are each hydrogen or a hydrocarbon of up to 18 carbon atoms unsubstituted or substituted by up to 3 substitutents selected from the group consisting of halo, alkyl of 1–6 carbon atoms, alkoxy of 1–6 carbon atoms, haloalkyl of 1–6 carbon atoms, hydroxy, amino, carboxy, alkoxycarbonyl of 1–6 carbon atoms in the alkoxy moiety, alkoxycarbonylalkyl of 1–6 carbon atoms in the alkoxy moiety and 1–6 carbon atoms in the alkyl moiety, aryl and oxo; or R^T and R^U together form the residue of a heterocyclic ring of 4–7 ring atoms; R^1 is hydrogen, a hydrocarbon of up to 18 carbon atoms unsubstituted or substituted by up to 3 substituents selected from the group consisting of halo, alkyl of 1–6 carbon atoms, alkoxy of 1–6 carbon atoms, haloalkyl of 1–6 carbon atoms, hydroxy, amino, carboxy, alkoxycarbonyl of 1–6 carbon atoms in the alkoxy moiety, alkoxycarbonylalkyl of 1–6 carbon atoms in the alkoxy moiety and 1–6 carbon atoms in the alkyl moiety, aryl and oxo, heterocyclyl of 4–7 ring members, $-COR^H$, CO_2R^H or $CON(R^H)_2$ wherein R^H is hydrogen, a hydrocarbon of up to 18 carbon atoms unsubstituted or substituted by up to 3 substituents selected from the group consisting of halo, alkyl of 1–6 carbon atoms, alkoxy of 1–6 carbon atoms, haloalkyl of 1–6 carbon atoms, hydroxy, amino, carboxy, alkoxycarbonyl of 1–6 carbon atoms in the alkoxy moiety, alkoxycarbonylalkyl of 1–6 carbon atoms in the alkoxy moiety and 1–6 carbon atoms in the alkyl moiety, aryl and oxo, or a heterocyclyl of 4–7 ring atoms, or two of said R^1 groups are joined to form a ring; R^2 and R^3 are each hydroxy, a hydrocarbon of up to 18 carbon atoms unsubstituted or substituted by up to 3 substituents selected from the group consisting of halo, alkyl of 1–6 carbon atoms, alkoxy of 1–6 carbon atoms, haloalkyl of 1–6 carbon atoms, hydroxy, amino, carboxy, alkoxycarbonyl of 1–6 carbon atoms in the alkoxy moiety, alkoxycarbonylalkyl of 1–6 carbon atoms in the alkoxy moiety and 1–6 carbon atoms in the alkyl moiety, aryl and oxo, or carbyloxy; R^4 is hydrogen or a hydrocarbon of up to 18 carbon atoms unsubstituted or substituted by up to 3 substituents selected from the group consisting of halo, alkyl of 1–6 carbon atoms, alkoxy of 1–6 carbon atoms, haloalkyl of 1–6 carbon atoms, hydroxy, amino, carboxy, alkoxycarbonyl of 1–6 carbon atoms in the alkoxy moiety, alkoxycarbonylalkyl of 1–6 carbon atoms in the alkoxy moiety and 1–6 carbon atoms in the alkyl moiety, aryl and oxo; R^5 is hydrogen, a hydrocarbon of up to 18 carbon atoms unsubstituted or substituted by up to 3 substituents selected from the group consisting of halo, alkyl of 1–6 carbon atoms, alkoxy of 1–6 carbon atoms, haloalkyl of 1–6 carbon atoms, hydroxy, amino, carboxy, alkoxycarbonyl of 1–6 carbon atoms in the alkoxy moiety, alkoxycarbonylalkyl of 1–6 carbon atoms in the alkoxy moiety and 1–6 carbon atoms in the alkyl moiety, aryl and oxo, a heterocyclyl of 4–7 ring atoms, $-COR^H$, CO_2R^H or $CON(R^H)_2$ wherein R^H is hydrogen, a hydrocarbon of up to 18 carbon atoms unsubstituted or substituted by up to 3 substituents selected from the group consisting of halo, alkyl of 1–6 carbon atoms, alkoxy of 1–6 carbon atoms, haloalkyl of 1–6 carbon atoms, hydroxy, amino, carboxy, alkoxycarbonyl of 1–6 carbon atoms in the alkoxy moiety, alkoxycarbonylalkyl of 1–6 carbon atoms in the alkoxy moiety and 1–6 carbon atoms in the alkyl moiety, aryl and oxo, or heterocyclyl of 4–7 ring atoms, or $-S(O)_nR^S$ wherein n and R^S are as above defined; and R^6 is hydroxy, a hydrocarbon of up to 18 carbon atoms unsubstituted or substituted by up to 3 substituents selected from the group consisting of halo, alkyl, of 1–6 carbon atoms, alkoxy of 1–6 carbon atoms, haloalkyl of 1–6 carbon atoms, hydroxy, amino, carboxy, alkoxycarbonyl of 1–6 carbon atoms in the alkoxy moiety, alkoxycarbonylalkyl of 1–6 carbon atoms in the alkoxy moiety and 1–6 carbon atoms in the alkyl moiety, aryl and oxo, hydrocarbyloxy, amino, arylamino or $-NHCONH_2$; provided that a carbon atom of the group R which carries an oxo substituent does not carry a second substituent other than a group $-NR^4R^5$.

4,524,074

3-(4-PIPERIDINYL)-1,2-BENZISOTHIAZOLES

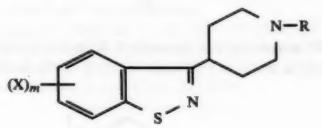
Joseph T. Strupczewski, Flemington, N.J., assignor to Hoechst-Roussel Pharmaceuticals Inc., Somerville, N.J.

Division of Ser. No. 499,583, May 31, 1983, Pat. No. 4,458,076. This application Apr. 23, 1984, Ser. No. 602,780

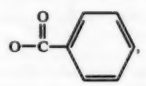
Int. Cl.³ A61K *31/445*

U.S. Cl. 514—321 **2 Claims**

1. A method of treating psychoses comprising administering to a mammal in need of psychoses treatment a psychoses-treating, effective amount of a compound of the formula

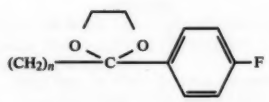


wherein R is hydrogen, loweralkyl, loweralkenyl, cycloalkyl-loweralkyl, phenylloweralkyl, hydroxy, diloweralkyamino-loweralkyl, cyano, cyanomethyl,

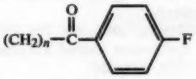


a group of the formula

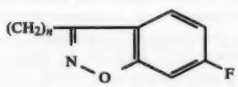
wherein R^1 is hydrogen, loweralkyl or a group of the formula OR^2 wherein R^2 is phenyl or benzyl; a group of the formula



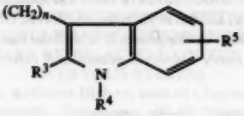
wherein n is 2 or 3; a group of the formula



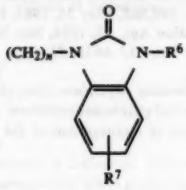
wherein n is 2 or 3; a group of the formula



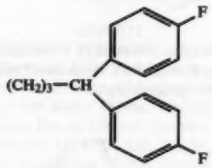
wherein n is 2 or 3; a group of the formula



wherein R^3 and R^4 are each independently hydrogen or lower-alkyl, R_5 is hydrogen, halogen or loweralkyl, and n is 2 or 3; a group of the formula



wherein R^6 is hydrogen or loweralkyl, R^7 is hydrogen, halogen or loweralkyl, and n is 2 or 3; or a group of the formula



X is hydrogen, halogen, loweralkyl, loweralkoxy or hydroxy; and m is 1 or 2; the optical antipodes thereof; or pharmaceutically acceptable acid addition salts thereof.

4,524,075

PHARMACEUTICAL FORMULATIONS CONTAINING PSEUDOMONIC ACID

Joshua Oduro-Yeboah, Worthing, England, assignor to Beecham Group p.l.c., England

Filed May 26, 1983, Ser. No. 498,276

Claims priority, application United Kingdom, May 28, 1982, 8215684; May 12, 1983, 8313036

Int. Cl.[3] A61K *31/44*

U.S. Cl. 514—451 20 Claims

1. A highly stable pharmaceutical composition in topical application form which comprises an antibacterially effective amount of pseudomonic acid, a pharmaceutically acceptable salt thereof or a pharmaceutically acceptable ester thereof and a stabilizing amount of at least 1% by weight of a poly(alkylene)glycol, a poly(alkoxy substituted alkylene)glycol, a pharmaceutically acceptable ether thereof, a pharmaceutically acceptable ester thereof or a mixture thereof.

4,524,076

NOVEL γ-AMINOBUTYRIC ACID TRANSAMINASE INHIBITORS

Brian W. Metcalf, Mason, and Bruce J. Lippert, Cincinnati, both of Ohio, assignors to Merrell Dow Pharmaceuticals Inc., Cincinnati, Ohio

Continuation of Ser. No. 597,799, Apr. 6, 1984, abandoned, which is a continuation of Ser. No. 540,743, Oct. 11, 1983, abandoned. This application Oct. 22, 1984, Ser. No. 663,250

Int. Cl.[3] A61K *31/34;* C07D *307/89*

U.S. Cl. 514—472 11 Claims

1. A compound of the formula

including the individual enantiomers and racemic mixtures thereof, the pharmaceutically acceptable salts thereof, wherein R is hydrogen or C_{1-6} lower alkyl.

4,524,077

LIQUID 2-HYDROXY-4-METHYLTHIOBUTYRIC ACID AND PROCESS FOR THE PREPARATION THEREOF

Dennis A. Ruest, Manchester; Masaharu Takano, St. Louis, and Lawrence R. Wolf, Creve Coeur, all of Mo., assignors to Monsanto Company, St. Louis, Mo.

Filed Nov. 14, 1983, Ser. No. 550,857

Int. Cl.[3] A01N *37/02;* C07C *149/14*

U.S. Cl. 514—557 24 Claims

1. A process for the preparation of 2-hydroxy-4-methylthiobutyric acid having improved color, odor and lower viscosity, comprising the steps of

hydrolyzing 2-hydroxy-4-methylthiobutyronitrile with sulfuric acid having an initial strength of betwen about 50% by weight and about 70% by weight on an organic-free basis, thereby producing an intermediate aqueous hydrolysis product solution containing 2-hydroxy-4-methylthiobutyramide;

hydrolyzing said 2-hydroxy-4-methylthiobutyramide with sulfuric acid having a strength of between about 30% by weight and about 50% by weight on an organic-free basis, thereby producing an aqueous hydrolyzate solution containing 2-hydroxy-4-methylthiobutyric acid;

contacting said hydrolyzate solution with a substantially water-immiscible organic solvent in a liquid/liquid extraction system to produce an extract comprising said solvent and 2-hydroxy-4-methylthiobutyric acid transferred from said hydrolyzate; and

recovering said 2-hydroxy-4-methylthiobutyric acid from said extract in the presence of about 5% or more by weight water based on the amount of recovered 2-hydroxy-4-methylthiobutyric acid.

24. A liquid phase animal feed supplement comprising between about 80% and about 95% by weight of the total of weight proportions of 2-hydroxy-4-methylthiobutyric acid monomer, dimers, and oligomers, and between about 5% and about 20% by weight water, and having a color of not greater than about 10 as measured on the Gardner scale, a ratio of the weight proportions of monomer to the weight proportions of the sum of dimers and other oligomers of about 2.8 or more, a kinematic viscosity at 25° C. as measured by a Cannon-Fenske viscometer of not greater than about 90 centistokes, and which, upon subjection to accelerating rate calorimetry exhibits neither exothermic nor endothermic thermochemical effects at any temperature less than about 150° C.

4,524,078

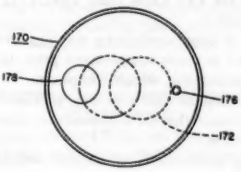
PRESSURIZED CONTAINER PROVIDING FOR THE SEPARATE STORAGE OF A PLURALITY OF MATERIALS

Robert F. Bardsley, Harrington Park, N.J.; Thomas P. Finucane, Hartsdale, N.Y.; Carl Hebel, Dover Foxcroft, Me.; Charles D. Schoonmaker, Boonton Township, Morris County, N.J.; Philip J. Wruk, Wilton, Conn., and Edward P. Lee, deceased, late of White Plains, N.Y. (by Janice N. Lee, executrix), assignors to General Foods Corporation, White Plains, N.Y.

Division of Ser. No. 336,838, Jan. 4, 1982, Pat. No. 4,399,158, which is a continuation-in-part of Ser. No. 917,262, Jun. 20, 1978, abandoned. This application Mar. 29, 1982, Ser. No. 363,244

Int. Cl.³ B65D *25/08*

U.S. Cl. 426—112 4 Claims



1. A container arrangement for separately storing a first liquid material and a second material in a container and providing for the automatic admixing of the first and second materials upon opening of the container, comprising, a container, having a flat top container wall, containing said first liquid material at superatmospheric pressure, with the pressure surrounding said container being atmospheric, said flat top container wall having a weakened portion defining a dispensing orifice along which the container is adapted to be opened by pressing the weakened portion into the container, a separate closed compartment, defined by closure walls, arranged within said container and filled with said second material at superatmospheric pressure which is equal to or less than the superatmospheric pressure in the container, said separate compartment being cup shaped with a planar open end which is releasably attached to a flat inner surface of said flat top container wall such that the flat inner surface of said container top wall forms a closure for said planar open end of the cup shaped compartment, such that the releasably attached compartment is released and detached from the inner surface of said flat top container wall responsive to the difference in pressure across the closure walls of the closed compartment caused by the superatmospheric pressure within the compartment and the lower pressure in the container, when the pressure in the container drops from superatmospheric pressure to atmospheric pressure upon opening of the container to atmospheric pressure, with said difference in pressure resulting in a sufficient force on said compartment closure walls to cause detachment of the compartment from the flat inner surface of the container, thereby allowing the first liquid material and the second material to admix through said planar open end of the compartment, and said cup shaped compartment extending at least partly beneath said weakened portion of the top container wall, such that the opening of the top closure by pressing the weakened portion into the container further ensures that the compartment is detached from the top surface of the container.

4,524,079

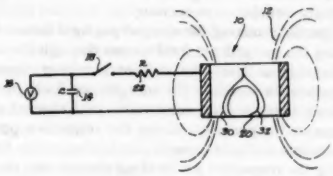
DEACTIVATION OF MICROORGANISMS BY AN OSCILLATING MAGNETIC FIELD

Gunter A. Hofmann, San Diego, Calif., assignor to Maxwell Laboratories, Inc., San Diego, Calif.

Filed Nov. 10, 1983, Ser. No. 550,894

Int. Cl.³ A23L *3/00, 3/26;* A61L *2/02*

U.S. Cl. 426—234 8 Claims



1. A method of deactivating microorganisms present in material having an electrical resistivity of at least about 10 ohms-cm which method comprises,

subjecting said material to at least one pulse of a pulsed, decaying, oscillating magnetic field having an intensity of between about 2 and about 100 Tesla and a frequency of between about 5 and about 500 kHz.

4,524,080

METHOD OF IMPROVING QUALITY OF WHEAT FLOUR

Ko Sugisawa, Nara; Masanori Yamamoto, Suita; Masaru Shibuki, Kyoto; Yukihiro Nomura; Kouji Sengoku, both of Nara, and Seiji Higashine, Nara, all of Japan, assignors to House Food Industrial Company Limited, Osaka, Japan

Filed Jun. 14, 1983, Ser. No. 504,375

Claims priority, application Japan, Jun. 16, 1982, 57-102139

Int. Cl.³ A21D *2/00, 6/00*

U.S. Cl. 426—236 5 Claims

1. A method of improving the water holding capacity of wheat flour, which comprises contacting said wheat flour for a time period of less than 60 minutes with a non-equilibrium plasma which is generated under a reduced pressure of lower than 100 Torr. in a gas selected from the group consisting of air, nitrogen gas, oxygen gas and carbon dioxide gas by applying a high frequency wave selected from the group consisting of radiowave and microwave.

4,524,081

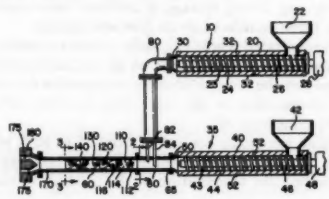
METHOD FOR MAKING A MARBLED PET FOOD

Arun K. Bansal, Hanover Park, Ill., assignor to The Quaker Oats Company, Chicago, Ill.

Filed Nov. 8, 1983, Ser. No. 549,959

Int. Cl.³ A23P *1/00;* A23J *3/00*

U.S. Cl. 426—249 9 Claims



1. A method for continuously making a marbled semi-moist or dry pet food comprising the steps of:

(a) merging a red pet food stream with a white pet food stream by (i) advancing the red pet food stream under a first pressure into a conduit having a substantially circular

cross section, said first pressure being sufficient to mold the red pet food stream into the shape of the conduit, and (ii) advancing the white pet food stream into a plurality of medial locations within said conduit to combine the white pet food stream with the red pet food stream into a single, merged pet food stream comprising a white pet food disposed within a red pet food at a plurality of medial locations, said merged pet food stream having a substantially circular cross-section;

(b) partiaiiy mixing the merged pet food stream by advancing the merged pet food stream through the conduit and through at least one stationary mixing element having means for dividing the merged pet food stream into at least two pet food substreams, said element also having means for partially mixing the respective pet food substreams, and said element also having means for discharging the respective pet food substreams into the conduit in a reconsolidated, partially mixed pet food strea; thereby dividing the merged pet food stream into at least two pet food substreams, partially mixing the respective pet food substreams and discharging the respective pet food substreams into the conduit in a reconsolidated, partially mixed pet food stream;

(c) expressing the reconsolidated partially mixed pet food stream through a shaping die at a second pressure above about 40 psig; and

(d) cutting the expressed pet food stream into pet food pieces.

4,524,082

HIGHLY CONCENTRATED EGG WHITE OR SALTED WHOLE EGG PRODUCT AND ITS METHOD OF PREPARATION

Roger Liot, Creteil, France, assignor to Roger Liot, S.A., Creteil, France

Filed Oct. 14, 1981, Ser. No. 311,311

Claims priority, application France, Oct. 17, 1980, 80 22309

Int. Cl.³ A23L *1/32*

U.S. Cl. 426—312 **9 Claims**

1. A process for preparing a concentrated whole egg product in the form of a paste which can be stored at ambient temperature in an air excluded environment and can then be reconstituted by rehydration for use in any culinary preparation in the same way as fresh whole egg, comprising

concentrating liquid whole egg to a paste having a dry solids content of 55 to 62% without permitting the temperature of the product to exceed 60° C.,

said concentrating step comprising

scavenging the product surface by means of a dry inert gas at a temperature not exceeding 60° C., the product being moved or agitated without turbulence substantially preventing the formation of foams and crusts;

and adding between 2 and 4% salt by weight based on the concentrated egg product; whereby said paste maintains its preservation and the textural properties of said liquid whole egg during storage at ambient temperature for at least three months in an air free atmosphere.

6. A concentrated whole egg paste product capable of being stored at ambient temperature in an air excluded environment which can then be reconstituted by rehydration for use in any culinary preparation in the same way as fresh whole egg, essentially consisting of:

dry whole egg solids content of from 55 to 62% which has been obtained by concentrating liquid whole egg without permitting the temperature of the product to exceed 60° C.;

salt by weight between 2 and 4%;

additional food ingredients or flavoring agents in amounts of 0.1 to 2%; and

containing less than 20,000 microorganism germs per gram after storage in an inert atmosphere for three months at ambient temperature and for a further week at 37° C. said paste product having substantially the same textural properties as said liquid whole egg.

4,524,083

RESERVED LIQUID EGGS AND METHOD OF PREPARATION

Roger Liot, Creteil, France, assignor to Roger Liot, S.A., Creteil, France

Continuation-in-part of Ser. No. 341,261, Jan. 21, 1982, abandoned, which is a continuation of Ser. No. 196,825, Oct. 14, 1980, abandoned, which is a continuation of Ser. No. 26,052, Apr. 2, 1979, abandoned, which is a continuation of Ser. No. 842,240, Oct. 14, 1977, abandoned. This application Apr. 29, 1983, Ser. No. 489,984

Claims priority, application Luxembourg, Oct. 15, 1976, 76012

Int. Cl.³ A23B *5/00*; A23L *1/32*

U.S. Cl. 426—330.1 **16 Claims**

1. In a salt- or sugar-containing raw egg product designed for maintenance at room temperature prior to inclusion in a recipe, the improvement which comprises:

(a) incorporating in said raw egg product sufficient salt, sugar or mixture thereof to provide an osmotic pressure of at least 20 atm;

(b) removing substantially all oxygen which could lead to recognizable spoilage or deterioration when said raw egg product is stored at room temperature for a prolonged period of time, said removal comprising treating said egg product to a temperature which avoids coagulation and deterioration of protein contained in said egg product, whereby the total amount of oxygen that results is less than 3 ppm;

(c) subjecting the deoxygenated and salted- or sugared-egg product mixture to a temperature below the coagulation and protein-deteriorating temperature for for a period sufficient to substantially destroy any bacterial contaminants; and

(d) storing the resultant product at conditions to maintain the oxygen level below 3 ppm and to avoid bacterial contamination.

4,524,084

PROCESS FOR THE OBTENTION OF AN ALGAE BEVERAGE

Francis Schirmann, Strasbourg, France, assignor to Klein-Wanner Societe Anonyme, Ingwiller, France

Filed Aug. 3, 1983, Ser. No. 520,132

Claims priority, application France, Aug. 5, 1982, 82 13831

Int. Cl.³ A23L *2/04*

U.S. Cl. 426—590 **7 Claims**

1. Process for the obtention of an algae beverage, comprising cutting and finely chopping a marine alga comprising fucus vesiculosus, keeping it in an oven for about 24 hours at a temperature of about 120° C., adding thereto an alcohol-water solution having a volume ratio of alcohol to water of 40/60 to 65/35, in the amount of about 10% by weight of the algae heated in the oven, then macerating the obtained mixture for about three weeks in a closed receptacle, at ambient temperature, then filtering said mixture and pressing the solids content, so as to remove therefrom all the liquor, then producing a mixture of the liquor thus obtained with a fruit concentrate and with water, and finally, pasteurizing the obtained product at about 75° C. for about 20 minutes.

4,524,085
LECITHIN CONTAINING COOKING FATS WITH REDUCED THERMAL DISCOLORATION

Edward R. Purves, and Robert F. Thomas, both of Cincinnati, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Nov. 14, 1983, Ser. No. 551,391
Int. Cl.³ A23D *5/00, 5/02*
U.S. Cl. 426—601 **22 Claims**

1. A process for the preparation of a cooking fat composition comprising:

(a) pretreating lecithin by diluting with fat to form a mixture such that the lecithin is in an amount of about 5% to about 85% by weight of the mixture, adding water in an amount of at least about 5% by weight of the lecithin, heating to at least about 130° F. (54° C.) to 170° F. (77° C.), and filtering the mixture to remove excess lecithin; and

(b) adding the filtrate to a cooking fat in amounts to provide sufficient lecithin to improve the anti-sticking properties of said composition;

wherein thermal discoloration of the fat is decreased compared to a fat containing the same level of untreated lecithin without substantially reducing the anti-sticking properties of the fat.

4,524,086
HARD BUTTERS AND COMPOSITIONS MADE THEREWITH

Kenneth W. Player, Olmsted Falls, and Lonny L. Wilson, Brunswick, both of Ohio, assignors to SCM Corporation, New York, N.Y.

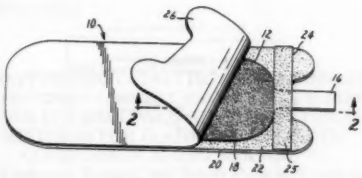
Filed Dec. 27, 1983, Ser. No. 566,094
Int. Cl.³ A23D *5/00;* **A23G** *3/00*
U.S. Cl. 426—607 **10 Claims**

1. A confectionery coating composition of exceptional gloss and gloss retention, comprising sugar, a lauric hard butter and an ester emulsifier blend, said ester emulsifier blend being present in the amount of aboout 2.6–6%, based on the weight on the hard butter, the improvement comprising an emulsifier blend consisting essentially of about 1.3–3% lactylated fatty acid ester of glycerol and about 1.3–3% polyglycerol ester of a fatty acid having an average degree of polymerization of about 2–6, an ester hydroxyl number of about 340–410, and a polyol hydroxyl number of about 970–1350.

4,524,087
CONDUCTIVE ADHESIVE AND BIOMEDICAL ELECTRODE

Michael R. Engel, White Bear Lake, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Division of Ser. No. 114,565, Jan. 23, 1980, abandoned. This application Jul. 18, 1983, Ser. No. 514,950
Int. Cl.³ A01N *1/02;* **B05D** *3/02, 3/06;* **A61B** *5/04*
U.S. Cl. 427—2 **17 Claims**



1. A process for making an essentially dry biomedical electrode comprising of an electrode plate having a first surface and a second surface, means for electrically connecting said electrode plate to a lead wire of an electro-medical device, and a swellable, dermally-nonirritating, conformable, cohesive, ionic, hydrophilic polymeric conductive material on said second surface of said electrode plate for enhancing electrical connection with the skin, said process comprising: forming said conductive material on said electrode plate by the steps of:

(a) compounding a precursor of said conductive material comprising

(1) a water soluble polyhydric alcohol which is a liquid at about 20° C.;

(2) an ionic, unsaturated, free radically polymerizable material soluble in said polyhydric alcohol;

(3) a photo initiator; and

(4) a crosslinking agent of a multi-functional unsaturated free radically-polymerizable material;

(b) coating said precursor on said second surface of said electrode plate or onto a releasable transfer sheet; and

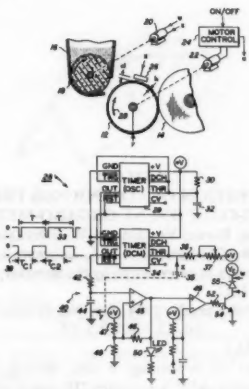
(c) polymerizing said coated precursor by exposure to ultraviolet light whereby an electrically conductive pressure-sensitive adhesive layer is formed on said electrode plate or said transfer sheet; and

(d) if formed on said transfer sheet, adhering said adhesive layer to said second surface of said electrode plate.

4,524,088
METHOD AND APPARATUS FOR CONTROLLING THE THICKNESS OF DEVELOPER ON AN APPLICATOR, SUCH AS A MAGNETIC BRUSH, IN ELECTROSTATIC REPRODUCTION

Ben W. Fagen, Jr., and Douglas W. Cappon, both of Rochester, N.Y., assignors to Magnetic Technologies Corp., Rochester, N.Y.

Filed Jan. 31, 1983, Ser. No. 462,651
Int. Cl.³ B05D *5/12;* **G03G** *15/00*
U.S. Cl. 427—10 **24 Claims**



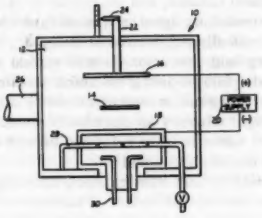
1. The method of controlling the thickness of monocomponent developer material on a magnetic brush operative to transfer said material to a photoreceptor to develop an image thereon, said method comprising the steps of sensing the dielectric constant presented by the amount of said material in a region adjacent to said brush, converting said dielectric constant into a repetitive electric pulse waveform, the duty cycle of which correspond to said dielectric constant to provide an electrical control signal, and controlling the dispensing of said developer material on to said brush with said control signal.

4,524,089

THREE-STEP PLASMA TREATMENT OF COPPER FOILS TO ENHANCE THEIR LAMINATE ADHESION

Reza Haque, Hamden, and Edward F. Smith, III, Madison, both of Conn., assignors to Olin Corporation, New Haven, Conn.

Filed Nov. 22, 1983, Ser. No. 554,466
Int. Cl.[3] B05D 3/06
U.S. Cl. 427—38 13 Claims



1. A process for coating at least one surface of a substrate material with an adherent polymeric film, said process comprising:

forming a first plasma of predominantly oxygen gas in the vicinity of said substrate material;

exposing said substrate material to said first plasma for a first period of time;

forming a plasma of a hydrocarbon monomer gas in the vicinity of said substrate material;

exposing said substrate material to said hydrocarbon monomer gas plasma for a second period of time;

forming a second plasma of predominantly oxygen gas in the vicinity of said substrate material; and

exposing said substrate material to said second oxygen plasma for a third period of time.

4,524,090

DEPOSITION OF COMPOUNDS FROM MULTI-COMPONENT ORGANO-METALS

Nicholas Bottka, Burke, Va.; Robert W. Schwartz, and Wayne E. Thun, both of Ridgecrest, Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Apr. 30, 1984, Ser. No. 605,712
Int. Cl.[3] B05D 3/06
U.S. Cl. 427—53.1 6 Claims

1. A method of depositing a film having the formula $A^{IIB}B^{VIA}$, wherein A^{IIB} is a group IIB metal and B^{VIA} is a chalcogenide selected from the group consisting of S, Se and Te, upon a target surface comprising the steps of:

exposing said surface to an environment containing a photolytically decomposable organo-metallic compound, said compound selected from the group consisting of R-X-M-X-R', R-M-X-M-R', R-M-X-R', R-M-CH_2-X-R' and R-M-X-X-R' wherein: R and R' are each selected from the group consisting of hydrogen, an alkyl, an aryl and an organic radical containing a heteroatom; M is a group IIB metal; and X is a chalcogenide; and

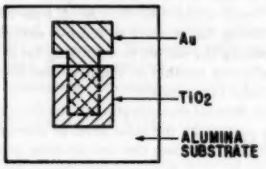
photolytically decomposing said organo-metallic compound to effect deposition of said film upon said surface.

4,524,091

METHOD OF PREPARING TiO_2 THICK FILM PHOTOANODES FOR PHOTOELECTROCHEMICAL CELLS

Cornelis Blaauw; Hussein M. Naguib, both of Kanata; Syed M. Ahmed, and Ahmad Aftab, both of Ottawa, all of Canada, assignors to Canadian Patents and Development Limited-Societe Canadienne des Brevets et d'Exploitation Limitee, Ottawa, Canada

Filed Sep. 22, 1982, Ser. No. 421,507
Claims priority, application Canada, May 28, 1982, 403995
Int. Cl.[3] B05D 5/12
U.S. Cl. 427—74 19 Claims



1. A method of producing a photoanode comprising the steps of:

(a) screen printing a film of conductive material on a clean ceramic substrate,

(b) heating said substrate and film to fuse said conductive material into a conductive layer,

(c) screen printing a layer of TiO_2 particles no larger than about 40 μm in an organic carrier, over said conductive layer so that some area of said TiO_2 is directly bonded to said ceramic substrate, said TiO_2 being a mixture of rutile and anatase forms in a ratio of more than 1:10 to 1:1,

(d) heating said substrate and layers to burn off said organic carrier and to sinter said TiO_2 particles, at least some of which are transformed from anatase form to rutile form,

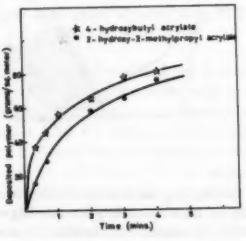
(e) heating the resulting structure in a reducing atmosphere to transform said TiO_2 to TiO_{2-x}, where x is between 0 and 1.

4,524,092

PROCESS AND A COMPOSITION FOR COATING A METALLIC SUBSTRATE WITH A POLYMERIC FILM

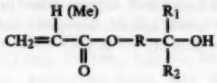
Sebastiano Cesca; Aldo Priola, both of S.Donato Milanese, and Fiorenzo Renzi, Gorgonzola, all of Italy, assignors to Anic S.p.A., Italy

Filed Sep. 7, 1983, Ser. No. 530,002
Claims priority, application Italy, Sep. 15, 1982, 23291 A/82
Int. Cl.[3] B05D 3/02
U.S. Cl. 427—388.2 11 Claims



1. A process for coating a metallic substrate with a cross-linked polymeric film, comprising contacting the metallic substrate with an aqueous composition comprising:

(a) at least one acrylic or metacrylic compound which can be defined by the general formula:



(I)

wherein:

R is a straight-line or branched aliphatic hydrocarbon radical, either saturated or unsaturated, having from 2 to 10 carbon atoms, or a cycloaliphatic or an aromatic group;

R^1 and R^2, which may be equal to or different from one another, are straight-line or branched alkyl groups, either saturated or unsaturated, having from 1 to 8 carbon atoms, or cycloaliphatic or aromatic groups;

(b) at least one unsaturated organic acid capable of being copolymerized with a compound of formula (I), in an amount of from 5 to 40 parts by weight per 100 parts of the compound, or an organic or a mineral acid that cannot be copolymerized with the compound (I), in an amount of from 1 to 10 parts by weight per 100 parts of the compound (I); and

(c) a polymerization catalyst; and subsequently heating the metallic substrate which has been contacted with the polymeric composition at a temperature up to about 180° C. for a time necessary to effect cross-linking of the polymeric film coating the substrate.

4,524,093

FABRIC COATING COMPOSITION WITH LOW FORMALDEHYDE EVOLUTION

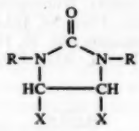
William E. Devry, Fairview Park, Ohio, assignor to The B. F. Goodrich Company, Akron, Ohio

Filed Apr. 30, 1984, Ser. No. 605,313

Int. Cl.³ B05D *3/02;* **C08L** *61/26*

U.S. Cl. 427—389.9 **9 Claims**

1. In an aqueous acrylic latex coating composition, the improvement which essentially comprises incorporating into the latex from about 1% to about 15% by dry weight of an imidazolidone curing resin of the formula



where X=—H, or —OH; and R=—CH_2O—R′ where R′ is alkyl having 1–10 carbons, and from about 0.5% to about 10% by dry weight of a metal chloride-type acid catalyst wherein said improvement substantially reduces formaldehyde evolution during curing.

4,524,094

SELF-SUPPORTING CATALYTIC SLEEVE FORMED OF INTERWOVEN LOOSELY PACKED MULTI-FIBER STRANDS FOR RECEIVING AIR-COMBUSTIBLE GAS MIXTURES FOR FLAMELESS CATALYTIC COMBUSTION ALONG THE SLEEVE

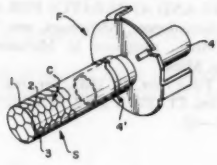
Robert Lindstrom, Reading, and Robert J. Allen, Saugus, both of Mass., assignors to Prototech Company, Newton Highlands, Mass.

Filed Apr. 19, 1984, Ser. No. 602,011

Int. Cl.³ F16L *13/08;* **B32B** *5/16;* **D04C** *1/00*

U.S. Cl. 428—36 **5 Claims**

1. A self-supportable air-gas mixture-receiving flameless combustion catalytic device comprising strands or yarns of loose packed and twisted inorganic fibers braided uniformly and loosely into a cylindrical sleeve, means for mounting the sleeve at one end to receive the air-gas mixture flowing along the axis of the sleeve as it extends substantially self-supportable therebeyond, and a catalytic coating provided on the external surfaces of the strands, as braided, and within the interstices thereof, the tension of braiding being adjusted to maintain low



pressure drop consistent with both self-supporting mechanical strength in the cylindrical form and sufficient catalytic area of braid to effect substantially complete flameless combustion of the air-gas mixture flowing transversely through the sleeve along its longitudinal axis.

4,524,095

LAMINATE INCLUDING AN ADHESIVE-COATED SUBSTRATE AND A REMOVABLE COVER LAYER HAVING MEANS TO FORM GRASP PARTS UPON BENDING

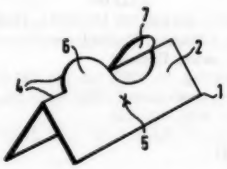
Karl-Heinz Gockel, Solingen-Gräfrath; Dieter Anhäuser, Melsbach; Hans R. Hoffmann, Neuwied, and Karl-Heinz Reinhold, Hausen, all of Fed. Rep. of Germany, assignors to Lohmann GmbH & Co. KG and Sanol Schwarz GmbH, both of, Fed. Rep. of Germany

Filed Oct. 12, 1983, Ser. No. 541,143

Claims priority, application Fed. Rep. of Germany, Apr. 27, 1983, 3315271

Int. Cl.³ B32B *3/10, 3/00*

U.S. Cl. 428—43 **10 Claims**



1. A flat laminate part comprising:

a flexible substrate layer having at least one surface;

a cover layer at least partially on the one surface of said substrate layer;

means for effecting adhesion of said cover layer to said surface of the substrate layer in the area of said cover layer such that the layers are securely held together but may be pulled apart;

a continuous cut in said cover layer from one edge to another edge of said cover layer thereby separating the cover layer into two parts, at least parts of said cut respectively diverting substantially from a straight connection line between the end points of the cut at the edges of the cover layer into each part of said cover layer;

the flexibility of said cover layer and the adhesion between said substrate layer and said cover layer being such that, upon bending of the flat laminate part substantially along said straight connection line between the end points of said cut at the edges of said cover layer in a direction which produces a convex curvature of the exposed surface convexly on the side of the cover layer, said diverting

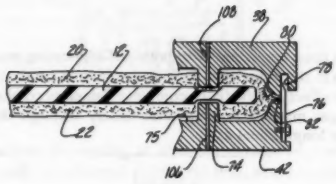
parts of said cut line into each part of the cover layer are separated and peeled off from the substrate layer to form thereby a grasp part for each cover layer part.

4,524,096

HEAT BONDED COMPOSITE PLASTIC ARTICLE AND METHOD AND APPARATUS FOR MAKING SAME

Charles E. Schiedegger, Metamora, and Vean Elfes, Lapeer, both of Mich., assignors to Metamora Products Corp., Metamora, Mich.

Filed Nov. 25, 1983, Ser. No. 555,046
Int. Cl.³ B32B *3/02, 27/04, 5/14, 5/32*
U.S. Cl. 428—68 7 Claims



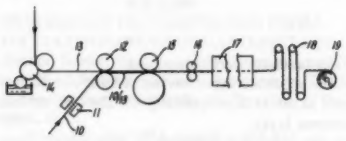
1. A heat-bonded rigid composite plastic article comprising a rigid body of solid thermoplastic material and a layer of flexible cellular plastic foam material disposed over the body of rigid thermoplastic material, said rigid body and said flexible layer being bonded together in a plurality of mutually discontinuous areas characterized by a permanent compression of the foam material, melting of the solid thermoplastic material of said rigid body in said discontinuous areas, and welding of the melted thermoplastic material of said rigid body into said foam to form a fused, rigid bond between said rigid thermoplastic body and said flexible foam layer.

4,524,097

WALLCOVERING IN ROLL FORM

Thomas Graham, Clitheroe, England, assignor to Reed International, PLC, London, England

Filed Sep. 14, 1983, Ser. No. 532,097
Claims priority, application United Kingdom, Sep. 14, 1982, 8226097; Apr. 22, 1983, 8311066
Int. Cl.³ B32B *3/00, 7/00, 23/08*
U.S. Cl. 428—141 10 Claims



3. A wallcovering in roll form for application to a surface with a water-based adhesive and for decoration with a water-based material after application to said surface, said wallcovering comprising two plies (**10**, **13**) which have been laminated together and whilst together, and moist, subjected to an embossing process, characterized in that one ply (**13**) is a paper material and the other ply (**10**) is a plastics material, in which the plastics material has a low water liquid permeability, is flexible, is dimensionally stable in the presence of water and is capable of restraining expansion of the wallcovering when it is wetted without exceeding its elastic limit and has a resistance to stretching, the plastics material being orientated polypropylene having a web thickness in the range of 10–250 microns, and in which the resistance to stretching of the wallcovering is such that, with the paper ply material having a cross-direction expansion in the range of 1 to 3% when saturated with water, the wallcovering cross-direction expansion is less than 0.4%.

5. A wallcovering as claimed in claim 3 in which the plastics ply has been taken beyond its rupture point in the course of embossing so that short, spaced, along-the-web, fissures are created to improve porosity for drying.

4,524,098

BOARD FOR ADDITIVE CIRCUITS

Tadao Shimizu, Tachikawashi; Noriyuki Shimizu, and Shoji Harada, both of Tokyo, all of Japan, assignors to Nikkan Industries Co., Ltd., Tokyo, Japan

Filed May 10, 1983, Ser. No. 493,269
Claims priority, application Japan, Oct. 9, 1982, 57-177994
Int. Cl.³ B32B *15/14;* C04B *39/08;* H05K *1/02*
U.S. Cl. 428—156 9 Claims

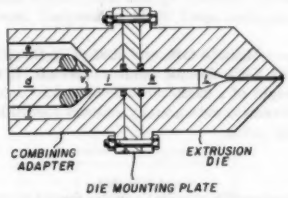
1. A press-molded board suitable for use in additive circuits which board is formed with minute convexo-concave irregularities in a large number on the surface of an inorganic composite plate wherein there is present (1) potassium titanate as a fiber-like inorganic substance alone or together with a needle-like inorganic substance in admixture with (2) an isotropic solid vitreous inorganic substance having a softening point below the melting point of the needle-like or fiber-like inorganic material, while maintaining the needle-like or fiber-like form of (1), where in the total weight of (1) and (2) contains 2 to 50% of the needle-like or fiber-like inorganic material (1) and 98 to 50% of the vitreous inorganic material (2), said irregularities on the surface are of 3 to 50 μm in R max.

4,524,099

COEXTRUDED ELASTOMERIC FILMS

Robert C. Di Luccio, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 424,448, Sep. 27, 1982, abandoned. This application Aug. 30, 1983, Ser. No. 526,960
Int. Cl.³ B32B *7/02*
U.S. Cl. 428—213 9 Claims



1. A transparent, elastomeric composite film structure having nontacky surface properties, said film structure comprising a core layer of an ethylene/vinyl acetate copolymer containing about 30–50 weight percent of vinyl acetate and two outer layers, coextruded with said core layer, of a polymeric material selected from the class consisting of homopolyethylene and copolymers of ethylene with up to 10% by weight of the copolymer of a C_3–C_8 α-olefin or vinyl acetate, said outer layer polymeric material having a density of at most about 0.94 g/cm^3, said two outer layers providing about 0.5–10% of the total thickness of said composite film structure, which structure following coextrusion is exposed to high energy radiation of which it absorbs about 4–16 megarads.

4,524,100
INORGANIC COMPOSITE AND THE PREPARATION THEREOF

Tadao Shimizu, Tachikawashi; Noriyuki Shimizu, and Shoji Harada, both of Meguroku, all of Japan, assignors to Nikkan Industries Co., Ltd., Tokyo, Japan

Filed May 10, 1983, Ser. No. 493,271

Claims priority, application Japan, May 10, 1982, 57-78028; May 10, 1982, 57-78029

Int. Cl.³ B32B *5/16*

U.S. Cl. 428—283 **24 Claims**

1. An inorganic composite of high density comprising (1) a needle-like or fiber-like inorganic material, or mixture thereof, present in an admixture with (2) an isotropic vitreous inorganic material, said needle-like or fiber-like inorganic material maintaining its needle-like or fiber-like form, said composite having been formed by directly bonding material (1) to material (2) by molding and heating to form a composite having a specific gravity of 2.0 to 2.6.

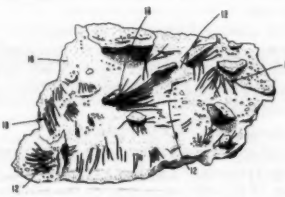
4,524,101
HIGH MODULUS POLYETHYLENE FIBER BUNDLES AS REINFORCEMENT FOR BRITTLE MATRICES

Nancy C. Eickman, Mountainside, N.J.; Walter Fabisiak, Easton, Pa., and Robert Dix, Wayne, N.J., assignors to Celanese Corporation, New York, N.Y.

Division of Ser. No. 464,269, Feb. 7, 1983, Pat. No. 4,483,727. This application Jul. 27, 1984, Ser. No. 635,103

Int. Cl.³ C04B *31/34*; D01G *1/04*

U.S. Cl. 428—294 **16 Claims**



1. A discrete, coherent bundle of high modulus polyethylene fibers prepared by the process comprising:

(a) preparing highly oriented, multifilament yarn;

(b) compressing the yarn to deform the individual filaments in cross-section whereby a loosely adhering unitary mass of individual filaments is formed wherein each filament substantially conforms to the deformed shape of the surrounding filaments; and

(c) chopping the compressed yarn into bundles of appropriate lengths wherein there is at least partial fusion between the fiber ends during said chopping.

4,524,102
MICROCELLULAR POLYURETHANE FOAMS HAVING INTEGRAL SKIN

Fritz Hostettler, R.F.D. 3, Box 318E, Stillhouse Rd., Freehold, N.J. 07728

Filed Feb. 15, 1984, Ser. No. 580,434

Int. Cl.³ B32B *29/00, 3/25*; C08J *9/34*; C08G *18/14*

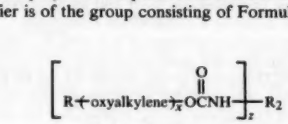
U.S. Cl. 428—318.8 **36 Claims**

1. A polyurethane product prepared by reacting a mixture comprising (a) a polyol having a molecular weight in the range of from about 1800 to about 10,000, (b) an organic polyisocyanate, (c) optionally, a chain extender, and (d) a catalyst for accelerating the NCO/active hydrogen reaction, in the presence of (e) a blowing agent and (f) from about 5 to about 50 parts by weight, per 100 parts by weight of said polyol, of a non-hydroxyl flow modifier, said flow modifier having the following characteristics: (i) a boiling point above about 150° C., (ii) normally-liquid or low melting solid forming a compatible liquid with said polyol, (iii) an average molecular weight upwards to about 3000, (iv) consisting essentially of carbon and hydrogen atoms in the form of monovalent or polyvalent hydrocarbon groups; and from 1 to 5 urethane

groups; and from 1 to 25 oxyalkylene groups per urethane group.

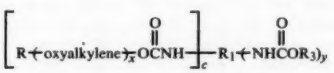
2. The polyurethane product of claim 1 wherein said flow modifier is of the group consisting of Formula I infra:

I



wherein the oxyalkylene unit contains from 2 to 4 carbon atoms in the oxyalkylene chain; wherein each R, individually, represents a monovalent acyclic, alicyclic or aromatic group; wherein x is at least one and upwards to 25; wherein z is from 1 to 5; and wherein R_2 represents a monovalent acyclic, alicyclic or aromatic group when z is 1 or a polyvalent acyclic, alicyclic or aromatic group when z is 2 to 5, the valence of R_2 being equal to the value of z; and Formula II infra:

II



wherein R, x and oxyalkylene have the meanings assigned in Formula I supra, wherein R_1 is a polyvalent acyclic, alicyclic, or aromatic group having the polyvalent meanings assigned to R_2 of Formula I supra, the valence of R_1 being equal to c plus y, wherein each R_3 individually is an acyclic, alicyclic or aromatic group; wherein y has a value of 1 to 2; and wherein c has a value of 1 to 2.

33. A multipackage curable composition useful in the manufacture of microcellular elastomers comprising Package A and Package B,

(a) wherein said Package A consists essentially of a mixture of polyester polyol, flow modifier, organic blowing agent, and a catalyst for accelerating the NCO/active hydrogen polyurethane reaction, said polyester polyol and said flow modifier being present in amounts which provide from about 5 to about 35 parts by weight of flow modifier per 100 parts by weight of polyester polyol, (i) said polyester polyol having a molecular weight of from about 1,800 to about 10,000, and (ii) said flow modifier being defined by claim 2;

(b) wherein said Package B is an organic polyisocyanate.

4,524,103
FILTER PAPER

Nigel J. Seager, Kent, England, assignor to Whatman Reeve Angel Public Limited Company, Maidstone, England

Filed Oct. 14, 1983, Ser. No. 542,299

Claims priority, application United Kingdom, Oct. 15, 1982, 8229533

Int. Cl.³ B32B *7/00*

U.S. Cl. 428—338 **8 Claims**

1. A filter paper consisting essentially of split fibrilated polyaramid fibrous material.

4,524,104
ADHESIVE COMPOSITION AND LAMINATES THEREFROM

Shigeru Hagio, Mukou, and Youji Kawachi, Oumihachiman, both of Japan, assignors to Sanyo Chemical Industries, Ltd., Kyoto, Japan

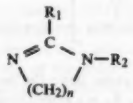
Filed Jul. 26, 1982, Ser. No. 401,816
Claims priority, application Japan, Aug. 25, 1981, 56-133590
Int. Cl.³ B32B *27/06, 27/08, 27/10;* **C09J** *3/26*
U.S. Cl. 428—341 **27 Claims**

1. A label, tape, contact film or other laminate structure comprising at least one substrate layer and an adhesive layer thereon having as adhesive a composition comprising

(A) at least one acrylic copolymer of 0.5–10% by weight of at least one ethylenically unsaturated monomer (a) having at least one NCO-reactive group, and 90–99.5% by weight of at least one ethylenically unsaturated monomer (b) having no NCO-reactive group, comprising an ester of (meth)acrylic acid with an alcohol having 1–14 carbon atoms;

(B) at least one blocked polyisocyanate comprising a reaction product of an organic polyisocyanate with at least one blocking agent selected from the group consisting of phenols, C- H- acid compounds, lactams, oximes, bisulfites, tertiary alcohols, secondary aromatic amines, imides and mercaptans;

(C) catalist comprising at least one cycloamidine compound selected from the group consisting of cycloamidines having the general formula (1) and salts thereof:



(1)

[wherein R_1 is H or an alkyl group having 1–8 carbon atoms, R_2 is an alkyl group having 1–8 carbon atoms, or R_1 and R_2 may be joined to form a ring having 2–11 methylene groups, n is an integer of 2–6, and each of the methylene groups may carry a lower alkyl substituent];

wherein equivalent ratio of the blocked NCO group of (B) to the NCO-reactive group of (A) is 0.01–0.4:1.

2. The laminate structure of claim 1, wherein the adhesive composition is present in an amount of 5 to 100 g/m².

4,524,105
MELT-SPUN ACRYLONITRILE POLYMER FIBER OF IMPROVED PROPERTIES

William E. Streetman, Gulf Breeze, and Shashikumar H. Daftary, Pensacola, both of Fla., assignors to American Cyanamid Company, Stamford, Conn.

Continuation-in-part of Ser. No. 853,014, Nov. 17, 1977, abandoned. This application Apr. 14, 1980, Ser. No. 140,043
Int. Cl.³ D02G *3/00*
U.S. Cl. 428—364 **2 Claims**

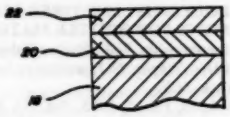
1. A melt-spun acrylonitrile polymer fiber wherein said acrylonitrile polymer has a composition of 87.6 parts acrylonitrile, 11.9 parts methyl methacrylate, 0.5 parts acrylamidomethylpropane sulfonic acid, and 3.5 parts polyvinyl alcohol, said fiber having a dye intensity of at least about 60, a shade change due to hot-wet processing of less than about 15, a straight tenacity of greater than about 3.8 grams per denier, a loop tenacity of greater than 2.5 grams per denier, and providing higher yarn spin limits than acrylonitrile polymer fiber produced by other spinning procedures while also providing higher yarn strength and single end breaks than comparable yarn spun from acrylonitrile polymer fiber produced by other spinning procedures.

2. A melt-spun acrylonitrile polymer fiber wherein said acrylonitrile polymer has a composition of 89 parts acrylonitrile, 11.0 parts methlmethacrylate and 6.5 parts polyvinyl alcohol, said fiber having a dye intensity of at least about 60, a shade change due to hot-wet processing of less than about 15, a straight tenacity of greater than about 3.8 grams per denier, a loop tenacity of greater than 2.5 grams per denier, and providing higher yarn spin limits than acrylonitrile polymer fiber produced by other spinning procedures while also providing higher yarn strength and single end breaks than comparable yarn spun from acrylonitrile polymer fiber produced by other spinning procedures.

4,524,106
DECORATIVE CARBON COATING AND METHOD

James D. Flasck, Rochester, Mich., assignor to Energy Conversion Devices, Inc., Troy, Mich.

Filed Jun. 23, 1983, Ser. No. 507,277
Int. Cl.³ B32B *9/00*
U.S. Cl. 428—408 **18 Claims**



9. A coated article comprising:

a substrate; and

a decorative coating formed by dc magnetron sputtering over at least a portion of the substrate said coating consisting essentially of a thin black layer of disordered carbon.

15. A method of making a black decorative coating having a high gloss comprising:

providing a relatively smooth surface; and

dc magnetron sputtering carbon from a high density graphite target on the smooth surface to form a thin, black layer consisting of amorphous carbon on the surface.

4,524,107
TOUGHENED THERMOSET LAMINATES

Joseph R. Marchetti, Hempfield Township, Westmoreland County, and Zal N. Sanjana, Penn Hills, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Mar. 20, 1984, Ser. No. 591,359
Int. Cl.³ B32B *27/38*
U.S. Cl. 428—413 **16 Claims**

1. A composition comprising:

(A) a water emulsifiable thermosettable epoxy resin;

(B) an effective amount of a water compatible epoxy hardener;

(C) an effective amount of a water compatible catalyst for said epoxy resin;

(D) about 5 to about 35%, based on total resin solids, of a water compatible terpolymer polymerized from about 10 to about 60% of an ethylenic monomer selected from the group consisting of ethylene, propylene, and mixtures thereof, and about 40 to about 90% of a vinylic monomer selected from the group consisting of vinyl acetate, vinyl chloride, and mixtures thereof, and an acrylic monomer selected from the group consisting of acrylamide, acrylic acid, methacrylic acid, and mixtures thereof, where the amount of said acrylic monomer is sufficient to give an acid number of about 1 to about 60; and

(E) sufficient water to produce a viscosity of about 100 to about 100 to about 400 centipoises.

4,524,108

MAGNETIC RECORDING MEDIUM

Yoshio Kawakami, Tohbu, Japan, assignor to TDK Corporation, Tokyo, Japan

Filed Sep. 23, 1983, Ser. No. 535,067
Claims priority, application Japan, Nov. 8, 1982, 57-194643
Int. Cl.³ B32B 5/16; G11B 5/70
U.S. Cl. 428—480 1 Claim

1. In a magnetic recording medium comprising a substrate and a magnetic layer formed thereon and composed of magnetic powder dispersed in a polymer binder, an improvement wherein said substrate is made of a polyethylene terephthalate having a refractive index of at least 1.499 in the direction of the thickness of the substrate, said substrate being treated on the side on which said magnetic layer is formed with corona discharge treatment.

4,524,109

RECORD TURNTABLE AND POLYMERIC COATING THEREON

Nitin V. Desai, Hightstown, N.J., assignor to RCA Corporation, Princeton, N.J.

Filed Apr. 22, 1983, Ser. No. 487,917
Int. Cl.³ B32B 27/32; B05D 1/02; C08F 10/00
U.S. Cl. 428—523 3 Claims

1. A record turntable adapted for rotation during playback of a record supported by said turntable having around its perimeter a uniform antifriction coating containing poly(isobutylene) having a weight average molecular weight of from about 50,000 to about 100,000.

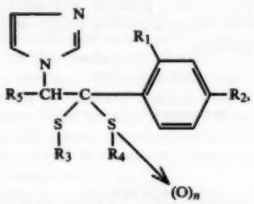
4,524,110

ANTIMICROBIAL IMIDAZOLE DERIVATIVES

Jan Heeres, Vosselaar; Leo J. J. Backx, Arendonk, and Joseph H. Mostmans, Antwerp, all of Belgium, assignors to Janssen Pharmaceutica N.V., Beerse, Belgium

Division of Ser. No. 342,553, Jan. 25, 1982, Pat. No. 4,483,865, which is a continuation-in-part of Ser. No. 248,594, Mar. 27, 1981, abandoned. This application Sep. 28, 1984, Ser. No. 655,267
Int. Cl.³ B32B 23/04
U.S. Cl. 428—537.1 13 Claims

1. A method of protecting non-living materials from microbial attack which comprises treating said materials with an effective antimicrobial amount of a compound selected from the group consisting of an imidazole derivative having the formula



(I)

the possible stereochemically isomeric forms, the acid addition salts and the metal salt complexes thereof, wherein:

R_1 and R_2 are each independently selected from the group consisting of hydrogen, halo and methyl;

R_3 and R_4 are each independently selected from the group consisting of C_1–C_6-lower alkyl and C_3–C_4-lower alkenyl, or R_3 and R_4 form, together with the sulfur atoms to which they are attached and the bridging carbon atom, a 5-, 6- or 7-membered ring which is optionally substituted with 1 to 4 C_1–C_4-lower alkyl groups;

R_5 is a member selected from the group consisting of hydrogen, C_1–C_4-lower alkyl, 2-propenyl and 2-propynyl; and

n is 0, 1 or 2.

2. A method according to claim 1 wherein said non-living materials are wood or coatings.

3. A method according to claim 1 wherein said non-living materials are textiles.

4,524,111

WELDABLE PAINT-COATED STEEL SHEETS HAVING EXCELLENT CORROSION RESISTANCE

Joji Oka, Tokyo; Hideaki Iwakura, Kanagawa; Narumi Ando, Tokyo; Kiyotoshi Iwasaki, Fukuoka, and Yoshio Shindow, Chiba, all of Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Continuation-in-part of Ser. No. 377,595, May 12, 1982, abandoned. This application May 3, 1984, Ser. No. 605,998
Claims priority, application Japan, May 19, 1981, 56-74281; May 19, 1981, 56-74282; May 19, 1981, 56-74283
Int. Cl.³ B32B 15/08, 15/02
U.S. Cl. 428—551 10 Claims

1. A weldable paint-coated steel sheet having improved corrosion resistance, weldability and workability, comprising a zinc alloy coated steel substrate containing 3 to 80% by weight of iron in the zinc alloy coating and a paint coating applied thereupon, said paint coating containing:

(1) not less than 70% by weight of zinc alloy powder with respect to the non-volatile matter of the paint, or

(2) at least one metal powder selected from the group consisting of zinc powder in amounts not less than 5% and zinc alloy powder in amounts not less than 40% by weight, said metal powder being used together with at least one powder selected from the group consisting of hard electric conductive powder in amounts not less than 20% and carbide powder in amounts not less than 5% by weight, all percentages being based on the total non-volatile matter in the paint coating, wherein the zinc alloy coating is present on the steel sheet in an amount of at least 1 g/m^2 and the paint coating thickness is in the range of 3 to 20μ.

5. A weldable paint-coated steel sheet having improved corrosion resistance, weldablility and workability, comprising a zinc allow coated steel substrate containing 3 to 20% by weight of nickel in the zinc alloy and a paint coating applied thereupon, said paint coating containing:

(1) not less than 70% by weight of zinc alloy powder with respect to the non-volatile matter of the paint, or

(2) at least one metal powder selected from the group consisting of zinc powder in amounts not less than 5% and zinc alloy powder in amounts not less than 40% by weight, said metal powder being used together with at least one powder selected from the group consisting of hard electric conductive powder in amounts not less than 20% and carbide powder in amounts not less than 5% by weight, all percentages being based on the total non-volatile matter in the paint coating, wherein the zinc alloy coating is present on the steel sheet in an amount of at least 1 g/m^2 and the paint coating thickness is in the range of 3 to 20μ.

4,524,112

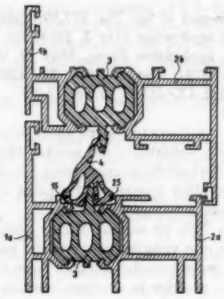
COMPOSITE PROFILED MEMBER

Otto Willert, Muehlenstrasse 30, DE-8784 Burgsinn, Fed. Rep. of Germany

Filed Aug. 3, 1983, Ser. No. 519,860
Claims priority, application Fed. Rep. of Germany, Aug. 5, 1982, 3229229; Aug. 5, 1982, 3229230
Int. Cl.³ E06B 1/32
U.S. Cl. 428—595 17 Claims

1. In a composite profiled member including two metal profiled bars, and at least one thermally insulating, one-piece insulating bar having two generally flat sides and two opposed engaging sides, with each said engaging side engaging into a respective clamping groove on a respective one of said metal

profiled bars and being fastened in the respective said clamping groove by respective hook-shaped groove webs which define the sides of each said clamping groove and which are pressed against said insulating bar, and wherein corresponding centering means are provided on said insulating bar and in each respective said clamping groove to assure dimensional accuracy when said groove webs are pressed against said insulating bar to fasten same; the improvement wherein: said centering means includes a bottom for each respective said clamping groove which is provided with a centering groove which has a trapezoidal cross section and widens in the direction toward said insulating bar, and a part of each said engaging side of said



insulating bar which has a trapezoidal cross section that becomes narrower in the direction toward the facing one of said metal profiled bars with said part centeringly engaging in the respective said centering groove; an elastic seal is provided; and means are provided for fastening said seal to said insulating bar so as to stiffen said seal and precisely fix its position when said composite profiled bar is cut to length, said means for fastening including at least one rib which projects from one of said generally flat sides of said insulating bar, is shaped so as to fasteningly engage said seal, extends in the longitudinal direction of said insulating bar, and to which said elastic seal is fastened.

4,524,113

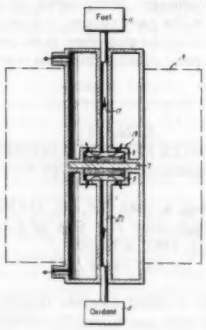
DIRECT USE OF METHANOL FUEL IN A MOLTEN CARBONATE FUEL CELL

Roger R. Lesieur, Enfield, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Continuation-in-part of Ser. No. 510,507, Jul. 5, 1983, abandoned. This application Apr. 30, 1984, Ser. No. 605,457

Int. Cl.³ H01M *8/14*

U.S. Cl. 429—16 **2 Claims**



1. A method of operating a molten carbonate fuel cell having a catalyst containing anode, a cathode, a molten carbonate electrolyte disposed therebetween, and fuel and oxidant passageways operating at about 1100° F. (593° C.) to about 1400° F. (736° C.) utilizing hydrogen as the fuel wherein the improvement comprises:

introducing methanol into the fuel passageway,

contacting the anode with said methanol in the presence of water at the operating temperature of the cell, thus causing the methanol to steam reform, producing hydrogen, carbon monoxide and carbon dioxide, and

contacting the anode with the hydrogen fuel causing the hydrogen to oxidize producing free electrons.

4,524,114

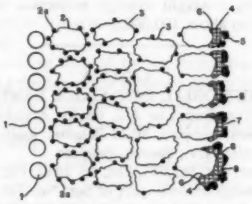
BIFUNCTIONAL AIR ELECTRODE

George J. Samuels, Syracuse; Thomas A. Schmitkons, Camillus; Terry L. Streeter, Liverpool, all of N.Y., and Royce W. Murray, Chapel Hill, N.C., assignors to Allied Corporation, Morris Township, Morris County, N.J.

Filed Jul. 5, 1983, Ser. No. 510,489

Int. Cl.³ H01M *4/86*

U.S. Cl. 429—42 **17 Claims**



1. An improved electrical device of the type which includes a material which is susceptible to decomposition when subjected to fluctuations in redox potential, said material being attached to a surface; the improvement which comprises a redox matrix comprising a polymeric matrix containing an insulating and rectifying amount of a dispersed redox conductor, said redox matrix being positioned between said material and the source of said redox potential and said redox matrix allowing the flow of electrical current to said material only at selected redox potentials.

4,524,115

VOLTAGE STABILIZING AGENTS FOR CELLS

John W. Paulson, and David J. Schulz, both of Madison, Wis., assignors to Rayovac Corporation, Madison, Wis.

Filed Nov. 19, 1982, Ser. No. 442,868

Int. Cl.³ H01M *10/44, 4/58*

U.S. Cl. 429—50 **2 Claims**

1. A process for reducing the open circuit voltage of a fresh nonaqueous lithium cell, the cell including a lithium based anode, an electrolyte, and a cathode, the process comprising:

(a) blending lithium hydroxide, the components of the cathode, and graphite into a mixture;

(b) compressing the mixture into pellet form, the pellet forming the cathode for the above cell.

4,524,116
ELECTROPHOTOGRAPHIC CONTACT PRINTING AND MASTER THEREFORE

Victor C. Humberstone, Sawston, England, assignor to Comtech Research Unit Limited, Bermuda

Filed May 17, 1983, Ser. No. 495,450
Claims priority, application United Kingdom, May 18, 1982, 8214427
Int. Cl.³ G03G *13/04, 13/22*
U.S. Cl. 430—31 17 Claims

1. A method of forming a master for use in image transfer and of contact printing onto a TEP film with said master, which comprises:

(1) forming an opaque image on a planar surface of a transparent electrically insulating substrate;

(2) depositing a thin transparent layer of an electrically conducting material over at least those regions of the surface which do not carry image elements;

(3) depositing a thin layer of an electrically insulating material over said planar surface and said image elements so as to form a thin transparent electrically insulating layer;

(4) forming a uniform surface charge on the surface of the photoconductive layer of the TEP film;

(5) bringing the charged surface of the TEP film into contact or into near contact with said image-bearing master;

(6) exposing the charged surface of the TEP film through said master;

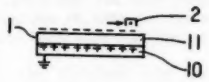
(7) removing the master; and

(8) developing the TEP film.

4,524,117
ELECTROPHOTOGRAPHIC METHOD FOR THE FORMATION OF TWO-COLORED IMAGES

Kouji Maekawa, Kyoto; Mamoru Kato, Osaka; Syoji Nakagama, Osaka, and Yumiko Sano, Osaka, all of Japan, assignors to Mita Industrial Co., Ltd., Osaka, Japan

Filed Jun. 15, 1984, Ser. No. 621,090
Claims priority, application Japan, Jun. 30, 1983, 58-120587
Int. Cl.³ G03G *13/01*
U.S. Cl. 430—44 7 Claims



1. An electrophotographic method for the formation of two-colored images comprising:

(1) uniformly charging the surface of a photoreceptor having a conductive substance and a photoconductive layer formed on the conductive substance, said photoconductive layer being sensitive to a first color,

(2) exposing a two-colored original, to form on said photoconductive layer an electrostatic latent image, which corresponds to a second color region in the original, with the same polarity as the electric charges on the surface of said photoconductive layer,

(3) subjecting the surface of said photoreceptor to a reversal development treatment by the use of a photoconductive color toner charged with the same polarity as the electric charges constituting said electrostatic latent image, to develop the non-charged region with the photoconductive color toner,

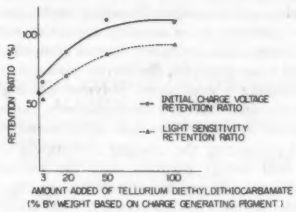
(4) subjecting said electrostatic latent image to a normal development treatment by the use of an insulative toner having a color different from the color of said photoconductive color toner, and

(5) charging the color toners on said photoconductive layer with a different polarity from the charging polarity in process (1) and simultaneously exposing said original through a filter shielding against said first color.

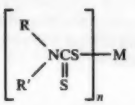
4,524,118
ELECTROPHOTOGRAPHIC PHOTOSENSITIVE MATERIAL WITH OZONE INHIBITOR

Kaname Nakatani, Kawasaki; Nobuhiro Miyakawa, Abiko; Teruaki Higashiguchi, Tokyo, and Tomomi Edo, Osaka, all of Japan, assignors to Mita Industrial Co., Ltd., Osaka, Japan

Filed Jun. 17, 1983, Ser. No. 505,253
Claims priority, application Japan, Jun. 25, 1982, 57-108525
Int. Cl.³ G03G *5/04*
U.S. Cl. 430—56 5 Claims



1. An electrophotographic material comprising an electroconductive substrate and formed thereon a layer of a photoconductive composition containing a dispersion of an organic pigment as a charge generating pigment in a charge transporting medium, said photoconductive composition comprising 0.5 to 20% by weight of at least one charge transporting substance selected from the group consisting of hole transporting substances and electron transporting substances, 1 to 20% by weight of a binder resin, and as an ozone resistance improver 50 to 100% by weight of an N,N-di-substituted-dithiocarbamic acid salt of the formula



wherein

R and R' each is an alkyl or aryl group,

M is a metal atom or an organic base, and

n is a number equal to the valence of M,

all amounts being based on the weight of said charge generating pigment.

4,524,119
ELECTROPHOTOGRAPHIC CARRIERS INCORPORATING FLUORINATED CARBON AND PROCESS OF USING SAME

Matthew H. Luly, Lancaster; George D. Lockyer, Jr., Amherst; Richard E. Eibeck, Orchard Park, all of N.Y., and Joseph Gaynor, Arcadia, Calif., assignors to Allied Corporation, Morris Township, Morris County, N.J.

Filed Jul. 25, 1983, Ser. No. 516,815
Int. Cl.³ G03G *9/10*; B32B *15/04, 19/04*
U.S. Cl. 430—108 16 Claims

1. Electrophotographic development carrier particles for use with toner particles comprising a plurality of core particles coated with fluorinated carbon or a fluorinated carbon containing resin which resin is capable of binding the fluorinated carbon to the core particles without adversely affecting the desired triboelectric properties of the fluorinated carbon with the proviso that said resin component does not include a fluorine containing resin.

4,524,120

PROCESS FOR CHARGING TONER COMPOSITIONS

Thomas J. Budny, Ontario; William H. Hollenbaugh, Jr., and Edward J. Gutman, both of Webster, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Feb. 21, 1984, Ser. No. 582,211

Int. Cl.³ G03G *9/10*

U.S. Cl. 430—137 **16 Claims**

1. An improved process for rapidly charging toner particles wwhich comprises providing uncharged and charged toner particles having incorporated therein resin particles and pigment particles, and thereafter (I) adding uncharged replenishment toner particles to an imaging apparatus with charged developer composition contained therein comprised of carrier particles and toner particles, the carrier particles consisting of a core containing a continuous polymer coating thereover having incorporated therein a fluoropolymer, present on from about 1 percent to about 20 percent of the surface area of the carrier, (II) contacting the charged developing composition containing said carrier particles with the uncharged toner particles wherein charges are transferred to the uncharged toner particles within a mixing period of from about 5 seconds to about 5 minutes, thereby resulting in substantially the same level of charge intensity for said uncharged toner particles as the charge intensity for the charged toner particles in the charged developer composition.

4,524,121

POSITIVE PHOTORESISTS CONTAINING PREFORMED POLYGLUTARIMIDE POLYMER

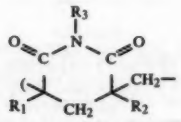
Robert D. Gleim, Newtown, and Mark P. de Grandpre, Ambler, both of Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

Filed Nov. 21, 1983, Ser. No. 553,221

Int. Cl.³ G03C *1/54, 1/68, 5/00*

U.S. Cl. 430—176 **30 Claims**

1. A positive photoresist comprising a preformed, non-cross-linked polyglutarimide polymer formed from an ester of (meth-)acrylic acid and having at least five percent by weight glutarimide units of the structure



where R_1, R_2 and R_3 independently represent hydrogen or unsubstituted or substituted alkyl, aryl, aralky, or alkaryl hydrocarbons having from one to twenty carbon atoms and where at least 20 mole percent of the R_3 substituents are hydrogen, dissolved in a non-aqueous, spinning solvent, and where the photoresist is developable with an aqueous solution.

4,524,122

SUBSTITUTED 4-NITROPHENYLAZO-1-NAPHTHOL CYAN DYES HAVING IMPROVED LIGHT STABILITY

Lynda D. Weber; Paul B. Merkel, both of Rochester, and Harold C. Warren, III, Rush, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Sep. 26, 1984, Ser. No. 654,598

Int. Cl.³ G03C *5/54, 1/40*

U.S. Cl. 430—223 **23 Claims**

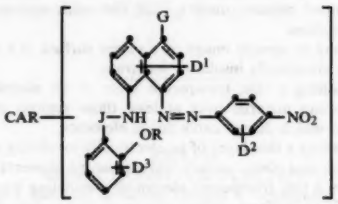
18. In a photographic assemblage comprising:

(a) a photographic element comprising a support having thereon the following layers in sequence: a dye image-receiving layer, a stripping layer, a substantially opaque layer and a photosensitive silver halide emulsion layer having associated therewith a dye image-providing material,

(b) a transparent cover sheet superposed over said silver halide emulsion layer, and

(c) an opaque alkaline processing composition and means containing same for discharge, during processing, between said cover sheet and said photosensitive element,

the improvement wherein said dye image-providing material is a nondiffusible compound capable of releasing at least one diffusible cyan dye moiety, said compound having the formula:



wherein:

(a) J represents SO_2 or CO,

(b) R represents a substituted or unsubstituted alkyl group of from 1 to about 10 carbon atoms or a substituted or unsubstituted aryl group of from 6 to about 12 carbon atoms,

(c) G represents a hydroxy group, a salt thereof, or a hydrolyzable precursor thereof,

(d) CAR represents a ballasted carrier moiety capable of releasing said diffusible dye moiety as a function of development of said silver halide emulsion layer under alkaline conditions, and

(e) D^1, D^2, and D^3 each independently represents H or one or more electron-withdrawing groups selected from $—SO_2Y^1$, $—CONY^1Y^2$, —Cl, $—COY^1$, —C≡N and $—SO_2NY^1Y^2$, where Y^1 and Y^2 each independently represents hydrogen, a substituted or unsubstituted alkyl group of from 1 to about 10 carbon atoms or a substituted or unsubstituted aryl group of from 6 to about 12 carbon atoms.

4,524,123

CHELATABLE 4-THIENYL IMIDAZOLE AZO DYES, THEIR USE IN COLOR PHOTOGRAPHIC RECORDING MATERIAL

Günther Schenk; Peter Bergthaller; Holger Heidenreich, all of Cologne, and Gerhard Wolfrüm, Leverkusen, all of Fed. Rep. of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Mar. 27, 1984, Ser. No. 593,936

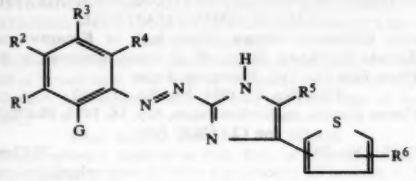
Claims priority, application Fed. Rep. of Germany, Apr. 7, 1983, 3312500

Int. Cl.³ G03C *1/40, 5/54*

U.S. Cl. 430—241 **2 Claims**

2. The method of producing a light-stable cyan image by dye diffusion processing of an imagewise exposed color photographic recording material containing, associated with at least one light-sensitive silver halide emulsion layer, a non-diffusible color providing compound while in contact with a supported image receptor layer,

the method comprising the step of releasing from said non-diffusible color providing compound under alkaline development conditions a diffusible azo dye corresponding to the following formula



wherein

R^1, R^2, R^3 and R^4, which may be identical or different, represent H, F, Cl, Br, —CN, $—NO_2$, $—CF_3$, $—OCF_3$, $—SCF_3$, alkyl, alkoxy, alkylthio, acylamino, alkylsulfonyl, arylsulfonyl, —CO—X or $—SO_2—Y$; or R^3 and R^4 together represent a group for completing a 1,3-oxathiol-S,S-dioxide ring;

R^5 represents aryl or a 2-thienyl or 3-thienyl group;

R^6 represents hydrogen, halogen or alkyl;

G represents a group capable of forming a 5-membered chelate ring;

X represents —OH, alkoxy, an amino group optionally substituted by alkyl or aryl, or a cyclic amino group;

Y represents H, —OH, an amino group optionally substituted by alkyl or aryl, a cyclic amino group or a group corresponding to the formula $—NH—SO_2—R^7$, and

R^7 represents alkyl, aryl, an amino group optionally substituted by alkyl, or a cyclic amino group

and transferring at least part of said released azo dye to said image receptor layer and forming complexes with metal ions.

4,524,124

COLOR PHOTOGRAPHIC RECORDING MATERIAL CONTAINING A THIAZOLE AZO DYE RELEASER FOR CYAN DYES

Peter Bergthaller, Cologne; Rudolf Stolzenburg, Langenfeld; Paul Marx, Leverkusen, and Rainer Hamprecht, Odenthal, all of Fed. Rep. of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jun. 18, 1984, Ser. No. 622,011

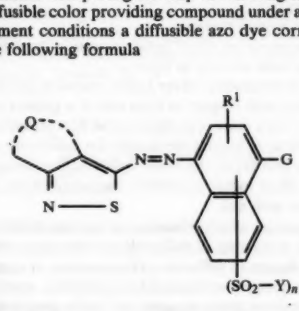
Claims priority, application Fed. Rep. of Germany, Jun. 28, 1983, 3323282

Int. Cl.³ G03C *5/54, 1/40*

U.S. Cl. 430—241 **2 Claims**

2. In the method of producing a light-stable cyan image by dye diffusion processing of an imagewise-exposed color photographic recording material containing associated with at least one light-sensitive silver halide emulsion layer, a non-diffusible color providing compound while in contact with a supported image receptor layer,

the method comprising the step of releasing from said non-diffusible color providing compound under alkaline development conditions a diffusible azo dye corresponding to the following formula



I

in which

Q represents the remainder of the molecule required to complete a fused benzene or thiophene radical, which contains additional electron acceptor groups, or to complete a fused pyridine, pyrimidine, pyridazine, pyrazine or thiazole ring;

G represents —OH;

R^1 represents H or one or two identical or different radicals selected from the group consisting of halogen, acyl, acylamino and —CN;

Y represents H, —OH, an amino group optionally substituted by alkyl or aryl, a cyclic amino group or a group corresponding to the formula $—NH—SO_2—R^2$;

R^2 represents alkyl, aryl, an amino group optionally substituted twice by alkyl or a cyclic amino group; n=0, 1 or 2.

4,524,125

CHEMICAL ETCHING OF LITHOGRAPHIC ALUMINUM SUBSTRATE

Jen-chi Huang, Ossining, N.Y., assignor to Polychrome Corporation, Yonkers, N.Y.

Filed Aug. 13, 1982, Ser. No. 407,978

Int. Cl.³ G03F *7/02*

U.S. Cl. 430—302 **3 Claims**

1. A non-electrolytic etching method for preparing a lithographic grade aluminum web which comprises intially contacting a grained lithographic grade aluminum web, said aluminum web being grained with a mass of fine abrasive pumice particles, with a solution consisting of hot sulfuric acid at a temperature of about 70°–100° C., having a sulfuric acid concentration of about 10–90%, and wherein the resulting hot sulfuric acid treated web is anodized directly after the non-electrolytic etching treatment.

4,524,126

ADHESION OF A PHOTORESIST TO A SUBSTRATE

John C. Marinace, and Ralph C. McGibbon, both of Yorktown Heights, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 280,150, Jun. 30, 1981, abandoned. This application Dec. 7, 1984, Ser. No. 678,389

Int. Cl.³ G03C *5/00*

U.S. Cl. 430—311 **20 Claims**

1. A process for fabricating a semiconductor device which comprises:

providing a layer about 10 to 3,000 Å thick selected from the group of zirconium, oxide thereof, oxide of titanium, oxide of hafnium, or a mixture thereof onto a surface selected from the group of gallium arsenide, silicon, polycrystalline silicon, glass, silicon dioxide, and silicon nitride; providing a photoresist on said layer; said layer enhancing the adhesion of said photoresist to said surface; wherein said photoresist is a positive photoresist material based on a formaldehyde novolak resin and a diazoketone; exposing said photoresist to desired image; developing the desired image by removing photoresist and said layer.

4,524,127

METHOD OF FABRICATING A SILICON LENS ARRAY

James Kane, Lawrenceville, N.J., assignor to RCA Corporation, Princeton, N.J.

Filed Apr. 27, 1983, Ser. No. 489,222

Int. Cl.³ G03C *5/00;* **G03B** *21/60*

U.S. Cl. 430—321 **8 Claims**

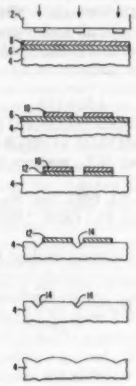
1. A process for manufacturing lens arrays in silicon which comprises:

(a) coating a 100 silicon wafer with a first protective layer of

silicon oxide and a layer of photoresist over the oxide layer,

(b) exposing the photoresist through a photomask having a uniform grating of the desired periodicity of the lens array,

(c) developing the photoresist and etching through the oxide layer to form a regular series of openings to the silicon substrate,



(d) anisotropically etching the silicon substrate to form a series of V-grooves in the openings wherein the walls of the grooves intersect along the 111 planes,

(e) removing the photoresist and oxide layers, and

(f) exposing the silicon substrate to a polishing etch bath to alter the profile of the silicon substrate to form a series of regularly shaped lenses between the V-grooves but without altering the sharpness of the bottom of said V-groove.

4,524,128

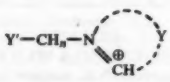
SPECTRALLY SENSITIZED SILVER HALIDE PHOTOTHERMOGRAPHIC MATERIAL

Larry D. Edwards; Frederick J. Sauter, and George J. Burgmaier, all of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Oct. 24, 1983, Ser. No. 544,043
Int. Cl.³ G03C *1/02*
U.S. Cl. 430—353 **19 Claims**

1. In a spectrally sensitized silver halide photothermographic element comprising a support bearing photographic silver halide spectrally sensitized by means of at least one spectral sensitizing dye, the improvement comprising:

as said spectral sensitizing dye, at least one heat bleachable cyanine spectral sensitizing dye having the structure



wherein Y' represents atoms which cause said dye to be heat bleachable at processing temperature of the photothermographic element; Y represents a moiety which completes a cyanine spectral sensitizing dye including, if necessary, an associated ion to maintain charge neutrality; and, n is 1 or 2 based on the valence of Y'.

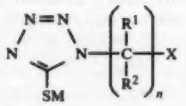
4,524,129

METHOD FOR PROCESSING COLOR PHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL

Shinzo Kishimoto; Shigeru Ohno, both of Kanagawa, and Teruaki Tsujikawa, Shiga, all of Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Sep. 17, 1984, Ser. No. 651,150
Claims priority, application Japan, Sep. 16, 1983, 58-170976
Int. Cl.³ G03C *7/00*
U.S. Cl. 430—393 **20 Claims**

1. A method for processing a color photographic light-sensitive material by subjecting an exposed silver halide color photographic light-sensitive material to color development processing then to bleaching processing and fixing processing or to bleach-fixing processing, which process comprises using a ferric ion complex salt or a persulfate as a bleaching agent in the bleaching processing or bleach-fixing processing and incorporating a compound represented by the general formula (I) described below or a salt thereof in a bath of the bleaching processing or bleach-fixing processing or in a pre-bath thereof.



(I)

wherein R^1 and R^2, which may be the same or different, each represents a hydrogen atom or a lower alkyl group; X represents a NR^3R^4 group, a —COOM group, a $—SO_3M$ group or a hydroxy group; R^3 and R^4, which may be the same or different, each represents a hydrogen atom or a substituted or unsubstituted alkyl group or R^3 and R^4 are bonded to each other to form a ring; M represents a cation; and n represents an integer of 1 to 5.

4,524,130

SILVER HALIDE COLOR PHOTOGRAPHIC LIGHT-SENSITIVE MATERIALS

Yasuo Iwasa, and Shingo Ishimaru, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jan. 19, 1984, Ser. No. 572,046
Claims priority, application Japan, Jan. 19, 1983, 58-7153
Int. Cl.³ G03C *1/46*
U.S. Cl. 430—505 **10 Claims**

1. A silver halide color photographic light-sensitive material, comprising:

a support base having thereon:

a first, color-sensitive, silver halide emulsion layer having a sensitivity with respect to light;

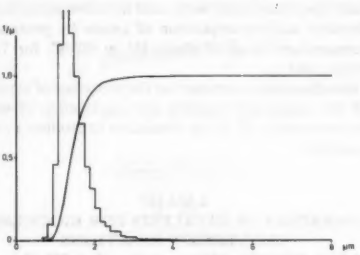
a second, color-sensitive, silver halide emulsion layer having a sensitivity with respect to light which is greater than the sensitivity with respect to light of the first sensitive layer, the second layer having the same color sensitivity properties as the first layer, the silver halide of the second layer having a silver iodide content in the range of 9% by mol to 15% by mol; and

a DIR compound which releases a compound selected from the group consisting of diffusible development inhibitors having a degree of diffusion of 0.4 or more as a releasing group and precursors thereof by a coupling reaction, the DIR compound being present in a color-sensitive, silver halide emulsion layer other than the second layer, which also has the same color sensitivity properties as the first layer.

4,524,131
PHOTOGRAPHIC SILVER HALIDE RECORDING MATERIAL WITH GRAFT COPOLYMER PARTICLES IN OUTER LAYER

Wolfgang Himmelmann; Günter Sackmann, and Rudolf Meyer, all of Leverkusen, Fed. Rep. of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Aug. 22, 1984, Ser. No. 643,159
Claims priority, application Fed. Rep. of Germany, Sep. 1, 1983, 3331542
Int. Cl.³ G03C *5/24*
U.S. Cl. 430—523 **6 Claims**



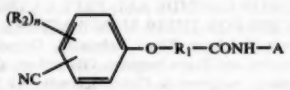
1. A photographic silver halide recording material which contains, in an outer transparent layer which is applied to the front and/or rear side, preformed polymer particles which have a particle size of less than 10 μm, are soluble in alkaline processing liquids and are dispersed in a hydrophilic colloid, characterised in that the layer contains in a dispersed form from 10 to 500 mg/m² of spherical particles of a graft copolymer of methacrylic acid and methyl-methacrylate on the graft base of an α-olefin- or styrene-maleic acid semi-amide- or maleic acid copolymer having a particle size of from 0.5 to 8 μm and a particle size distribution of ±1 μm.

4,524,132
COLOR PHOTOGRAPHIC SILVER HALIDE LIGHT-SENSITIVE MATERIAL

Kozo Aoki; Makoto Umemoto, and Akira Ogawa, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Sep. 6, 1984, Ser. No. 647,953
Claims priority, application Japan, Sep. 6, 1983, 58-163979
Int. Cl.³ G03C *7/26*
U.S. Cl. 430—552 **18 Claims**

1. A color photographic silver halide light-sensitive material comprising a support base having thereon a silver halide emulsion layer wherein said material contains at least one coupler represented by formula (I)



wherein A represents a yellow coupler residue, a magenta coupler residue, or a cyan coupler residue; R_1 represents a substituted or unsubstituted acyclic or cyclic alkylene group; R_2 represents a halogen atom, a hydroxyl group, a cyano group, a substituted or unsubstituted alkyl group, a substituted or unsubstituted acylamino group, a substituted or unsubstituted sulfonamido group or a substituted or unsubstituted acyl group; and n represents an integer of 0 to 3.

4,524,133
TEST DEVICE FOR LACTASE ACTIVITY IN A MECONIUM SAMPLE

Richard J. Tyhach, Elkhart, Ind., assignor to Miles Laboratories, Inc., Elkhart, Ind.

Continuation of Ser. No. 289,455, Aug. 3, 1981, abandoned. This application Aug. 19, 1983, Ser. No. 496,925
Int. Cl.³ C12Q *1/54, 1/34, 1/26, 1/28*
U.S. Cl. 435—14 **6 Claims**

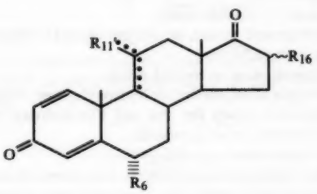
1. A test device for the detection of lactase activity in a meconium sample which comprises a carrier matrix incorporated with a composition comprising 1 to 4 percent by weight lactose, 3,3',5,5'-tetraalkylbenzidine indicator, glucose oxidase, and 0.1 to 1 percent by weight of a nonionic detergent.

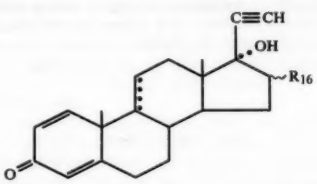
4,524,134
PROCESS FOR PREPARING 1,2-DEHYDRO STEROIDS

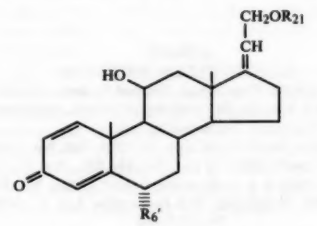
Leo A. Kominek, Portage, and Holly J. Wolf, Comstock Township, Kalamazoo County, both of Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

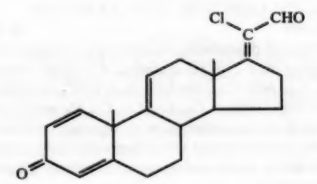
Continuation-in-part of Ser. No. 403,949, Jul. 30, 1982, abandoned. This application Oct. 25, 1982, Ser. No. 436,552
Int. Cl.³ C12P *33/02*; C12N *1/04, 11/04*
U.S. Cl. 435—61 **8 Claims**

1. A process for preparing a 1,2-dehydro-Δ^4-3-keto steroid selected from the group consisting of









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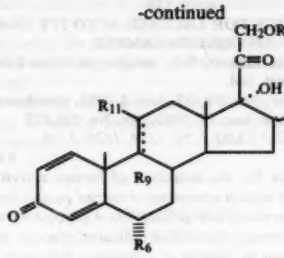


(V)

R_6 is a hydrogen or fluorine atom or methyl group.

R_6' is a hydrogen atom or methyl group.

R_9 is nothing, a hydrogen, fluorine or oxygen atom which makes the C ring

(a) $\Delta^{9(11)}$ when R_9 is nothing and

(b) 9β,11β-epoxide when R_9 is an oxygen atom;

R_{11} is a hydrogen or oxygen atom, two hydrogen atoms, or α- or β-hydroxyl group which makes the C-ring

(a) $\Delta^{9(11)}$ when R_{11} is a hydrogen atom,

(b) 9β,11β-epoxide when R_{11} is an oxygen atom and ..... between C_{11} and R_{11} is a single bond, and

(c) a ketone when R_{11} is an oxygen atom and ..... between C_{11} and R_{11} is a double bond;

~ indicates that the attached group can be in either the α or 62 configuration;

is a single or double bond;

R_{11}' is a β-hydroxyl group, an oxygen atom (11-ketone), or hydrogen atom ($\Delta^{9(11)}$);

R_{16} is a hydrogen atom or methyl group;

R_{16}' is a hydrogen atom, methyl or hydroxyl group, when R_{16}' is an α-hydroxyl group the 16α and 17α-hydroxyl groups can be in the form of an acetonide;

R_{21} is a hydrogen atom or —OC—OR_{21}';

R_{21}' is methyl, ethyl, or phenyl which comprises exposing the corresponding 1,2-saturated-Δ^4-3 keto steroid to air-dried or heat-dried cells of Arthrobacter simplex having a moisture content of about 1 to about 10% where the cells are dried in the absence of an organic solvent.

4,524,135

A-21978C CYCLIC PEPTIDES

Bernard J. Abbott, Greenwood; Manuel Debono, Indianapolis, and David S. Fukuda, Brownsburg, all of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Division of Ser. No. 575,648, Jan. 31, 1984, Pat. No. 4,482,487, which is a continuation of Ser. No. 493,446, Jun. 13, 1983, abandoned, which is a continuation-in-part of Ser. No. 380,497, May 21, 1982, abandoned. This application Aug. 3, 1984, Ser. No. 637,666

Int. Cl.³ C12P *21/06, 21/04;* C12R *1/045*

U.S. Cl. 435—69 **23 Claims**

1. The method of deacylating an antibiotic selected from the group consisting of A-21978C complex, A-21978C factors C_0, C_1, C_2, C_3, C_4, and C_5, blocked A-21978C complex, and blocked A-21978C factors C_0, C_1, C_2, C_3, C_4 and C_5 which comprises exposing the antibiotic in an aqueous medium to an enzyme which deacylates and which is produced by a microorganism of the family Actinoplanaceae until substantial deacylation is accomplished.

4,524,136

PROCESS FOR PREPARING A COSMETIC MATERIAL

Byung S. Lee, and Chang K. Kim, both of Seoul, Rep. of Korea, assignors to Pacific Chemical Industrial Co., Ltd., Seoul, Rep. of Korea

Continuation of Ser. No. 144,876, Apr. 29, 1980, abandoned. This application Nov. 24, 1982, Ser. No. 444,187

Claims priority, application Rep. of Korea, May 1, 1979, 1979-1389

Int. Cl.³ C12P *7/56*

U.S. Cl. 435—139 **7 Claims**

1. A process for preparing a cosmetic material comprising the steps of:

(a) simultaneously and coextensively carrying out in skim milk the processes of lactic acid formulation by lactic acid bacteria and decomposition of casein by proteases in a temperature range of about 35° to 40° C. for 12 to 48 hours; and

(b) simultaneously carrying out the processes of sterilization of said lactic acid bacteria and inactivation of said proteases at about 75° C. for 30 minutes to produce a cosmetic material.

4,524,137

PREPARATION OF CATALYSTS FOR BIOCHEMICAL CONVERSION REACTIONS

Bärbel G. R. Hägerdal, Mätaregränden 10, S-222 47 Lund, and Klaus H. Mosbach, Lackalänga 31-38, S-244 02 Furulund, both of Sweden

PCT No. PCT/SE80/00216, § 371 Date Apr. 13, 1981, § 102(e) Date Apr. 13, 1981, PCT Pub. No. WO81/00576, PCT Pub. Date Mar. 5, 1981

PCT Filed Aug. 22, 1980, Ser. No. 261,220

Claims priority, application Sweden, Aug. 23, 1979, 7907035

Int. Cl.³ C12N *11/10, 11/08;* C12P *7/14*

U.S. Cl. 435—178 **9 Claims**

1. A method of preparing a catalyst for biochemical conversion reactions, which require the presence of at least one enzyme and at least one microorganism, wherein there is added to a polymer or monomer in solution or suspension at least one enzyme, subsequent to previously activating suitable groups of the enzyme or of the polymer or monomer, so that when the polymer, or monomer, and the enzyme are brought together the enzyme is bound to the molecules of said polymer, or monomer, by covalent bonds, whereafter the polymer, or monomer, with the enzyme covalently bound thereto is mixed in solution or suspension with at least one microorganism and a polymer, or monomer, capable of being cross-linked, whereafter the mixture thus obtained is subjected to a cross-linking polymerization process so as to obtain solid bodies of polymer containing the enzyme covalently bound to the polymer material, and the microorganism entrapped in the three-dimensional cross-linked structure of said bodies.

4,524,138

SUBSTANTIALLY PORE-FREE SINTERED POLYCRYSTALLINE ARTICLES OF α-SILICON CARBIDE, BORON CARBIDE AND FREE CARBON AND PROCESS FOR THEIR MANUFACTURE

Karl A. Schwetz, Sulzberg; Klaus Reinmuth, Durach; Klaus Hunold, Kempten, and Franz Isemann, Oberstdorf, all of Fed. Rep. of Germany, assignors to Elektroschmelzwerk Kempten GmbH, Munich, Fed. Rep. of Germany

Filed May 5, 1983, Ser. No. 491,662

Claims priority, application Fed. Rep. of Germany, May 13, 1982, 3218052

Int. Cl.³ C04B *35/56, 35/52*

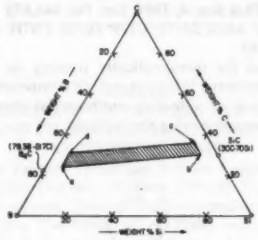
U.S. Cl. 501—90 **10 Claims**

1. A substantially pore-free sintered polycrystalline article consisting essentially of α-silicon carbide, boron carbide and free carbon, the proportions in percent by weight, are defined

by the trapezoidal area having, in the ternary system B/Si/C of FIG. 1, the corner points

a=89.0% B_4C, 9.9% α-SiC, 1.1% C
b=9.9% B_4C, 89.0% α-SiC, 1.1% C
c=9.0% B_4C, 81.0% α-SiC, 10.0% C
d=81.0% B_4C, 9.0% α-SiC 10.0% C;

the article having a homogeneous microstructure and a density of at least 99% of the theoretical density, an average structural



POINT DESIGNATION	PHASE COMPOSITION % B_4C - % SiC - % C
a	89.0 - 9.9 - 1.1
b	9.9 - 89.0 - 1.1
c	9.0 - 81.0 - 10.0
d	81.0 - 9.0 - 10.0

grain size of less than 20 μm, and a 4-point flexural strength of at least 400 N/mm^2said article being produced from fine-grained mixtures of α-silicon carbide, boron carbide, and a carbon source selected from carbon, an organic material that can be coked to form carbon, and mixtures thereof, by pressureless sintering and subsequent post-densification of the resulting sintered article by hot isostatic pressure sintering using an inert gas as pressure-transfer medium.

4,524,139

PROCESS FOR THE COMPRESSIVE REGENERATION OF FLEXIBLE, POROUS MATERIALS

Uwe Fuchs, Munich, Fed. Rep. of Germany, assignor to Linde Aktiengesellschaft, Wiesbaden, Fed. Rep. of Germany

Filed Feb. 16, 1983, Ser. No. 467,007

Claims priority, application Fed. Rep. of Germany, Feb. 16, 1982, 3205377

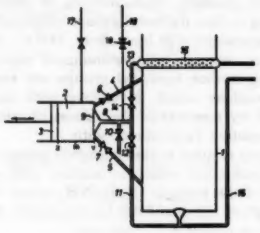
Int. Cl.³ B01J *20/34;* **B01D** *41/02;* **C02F** *3/10;* **B30B** *9/06*

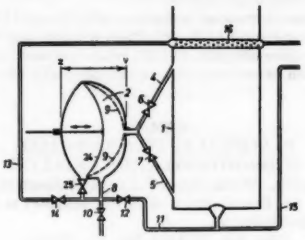
U.S. Cl. 502—22 **27 Claims**

1. A process for the compressive regeneration of flexible, porous particulate material which is loaded with substances removed from liquids treated in a reactor in which the porous material is used as filter particles, oil-separating particles, or carrier, particles, which comprises regenerating the loaded material by:

conducting the loaded material together with liquid from the reactor into a press chamber associated with the reactor and having movable press means, with the porous material being drawn into the press chamber from the reactor by moving the press means in a rearward direction to create a suction effect; moving the press means forward after the loaded material has been drawn into the press chamber to press out the liquid and the loading substances from the loaded material while retaining the material in the press chamber; conducting additional liquid into the press chamber for dispersing the porous material in the additional liquid, by subsequently moving the press means rearwardly; and then moving the press means forward to force the regenerated material dispersed in the additional liquid back into the reactor.

2. A process according to claim 1, further comprising after filling the press chamber, pressing the liquid out of the loaded material by at least one partial forward movement of the press means; taking liquid into the press chamber by at least one partial, subsequently conducted rearward movement of the press means for cleaning the material by flushing; and, by a subsequent forward movement of the press means, pressing the liquid and the substances to be removed out of the material.





3. A process according to claim 2, wherein wastewater from the reactor is taken in as the liquid to clean the material by flushing.

4,524,140

HYDROTHERMAL ZEOLITE ACTIVATION

Clarence D. Chang, Princeton, and Joseph N. Miale, Lawrenceville, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 465,987, Feb. 14, 1983,. This application Jul. 16, 1984, Ser. No. 631,688

Int. Cl.³ B01J *29/28*

U.S. Cl. 502—61 **8 Claims**

1. A method for substituting aluminum or gallium for boron or iron contained in the robust framework of a high silica content crystalline zeolite, which method comprises:

hydrothermally treating said zeolite in the presence of a compound of said alumina or gallium, said hydrothermal treatment being under conditions effective to induce said substitution.

7. A method for increasing the catalytic acid activity of a high silica content crystalline zeolite that contains tenaciously held boron or iron which method comprises:

contacting said zeolite with a compound of aluminum or gallium under hydrothermal conditions, which conditions include a temperature of 50° C. to 375° C. for from 0.25 hour to 350 hours whereby enhancing said catalytic acid activity as determined by the alpha test.

4,524,141

POLYMERIZATION CATALYSTS AND METHODS

Thomas J. Pullukat, Hoffman Estates, Ill.; Yu-Tang Hwang, Clinton, Iowa, and Robert A. Dombro, Palatine, Ill., assignors to Chemplex Company, Rolling Meadows, Ill.

Filed Apr. 21, 1983, Ser. No. 487,454

Int. Cl.³ C08F *4/02, 4/62, 4/64, 4/68*

U.S. Cl. 502—107 **31 Claims**

17. The method of making a solid catalyst for use with an

organometallic cocatalyst in the polymerization and copolymerization of 1-olefins, said method comprising the steps of:

(A) reacting a support comprising

(1) silica, alumina, silica-alumina or mixtures of these having surface hydroxyl groups and dried or calcined at a temperature of at least about 200° C., or

(2) silica, alumina, silica-alumina or mixtures of these having surface hydroxyl groups and reacted with an organosilane which is reactive with said groups followed by removal of any excess of said organosilane and reaction by-products, with

(B) an excess relative to said hydroxyl groups of an organosilicon compound which is reactive with said hydroxyl groups of the formula $(R_3Si)_2NH$, where R is a hydrocarbyl group selected from C_1–C_{20} alkyls, aryls, alkaryls, aralkyls or mixtures of these; and,

(C) a Group IIA organometallic compound or complex of said Group IIA compound with a Group IIIA organometallic compound; followed by

(D) a transition metal compound of a Group IVB, Group VB or mixtures of these metals; wherein said excess organosilicon compound of (B) is not removed prior to the addition of said transition metal compound of (D).

4,524,142

PLATINUM (O) COMPLEX-BASED HYDROFORMYLATION CATALYST

Chao-Yang Hsu, Media; James E. Lyons, Wallingford, and Paul E. Ellis, Jr., Downingtown, all of Pa., assignors to Sun Tech, Inc., Philadelphia, Pa.

Filed Apr. 11, 1984, Ser. No. 598,931
Int. Cl.³ B01J *31/12, 31/22, 31/24*
U.S. Cl. 502—153 **12 Claims**

1. A catalyst system for hydroformylation of olefins, which comprises (1) a platinum (0) complex containing two bidentate diphosphine, diarsine or distibine ligands, and (2) a Group IVB metal halide.

3. The composition of claim 1 wherein the Group IVB metal halide has one of the following formulas:

$MR_nX_{(4-n)}$; MX_2; or MX_4

wherein M is germanium, lead or tin; R is alkyl, alkoxyl, aryl, or aryloxyl in which case n is an integer of from 1 to 3, or R is an anion derived from a diketone, a diacid, or a diester, in which case n is an integer of from 1 to 3 if the anion is a monoanion, or n is 1 if the anion is a di-anion; and X is a halide.

4,524,143

CATALYST FOR PREPARATION OF LINEAR POLYETHYLENEPOLYAMINES

Steven H. Vanderpool, New Braunfels, Tex., assignor to Texaco Inc., White Plains, N.Y.

Filed Jan. 3, 1983, Ser. No. 455,154
Int. Cl.³ B01J *27/14*
U.S. Cl. 502—208 **9 Claims**

1. As a new composition of matter, a thermally activated pelleted composition consisting essentially of zirconium silicate having from about 0.5 wt. % to about 10 wt. % of phosphorous thermally chemically bonded thereto.

4,524,144

ALKALI METAL-PROMOTED ZINC TITANATE HYDROGEL CATALYST FOR DEHYDROGENATION OF ORGANIC COMPOUNDS

Arthur W. Aldag, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 468,019, Feb. 18, 1983, Pat. No. 4,463,213.
This application Apr. 11, 1984, Ser. No. 598,778
Int. Cl.³ B01J *21/04, 21/06, 23/04, 23/06*
U.S. Cl. 502—342 **14 Claims**

1. A catalyst composition comprising a hydrogel of zinc titanate and a suitable acidic carrier and a promoter selected from the group consisting of lithium, sodium, potassium, rubidium and cesium.

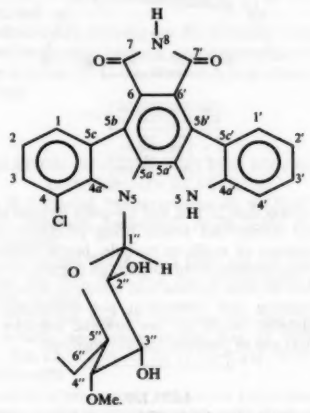
4,524,145

4'-DESCHLORODEBECCAMYCIN PHARMACEUTICAL COMPOSITION AND METHOD OF USE

James A. Matson, Fayetteville, N.Y., assignor to Bristol-Myers Company, New York, N.Y.

Filed Sep. 4, 1984, Ser. No. 646,673
Int. Cl.³ A61K *31/71;* **C12P** *19/38;* **C07H** *19/04*
U.S. Cl. 514—43 **3 Claims**

3. A method for therapeutically treating an animal host affected by a bacterial infection, which comprises administering to said host an effective antibacterial dose of 4'-deschlororebeccamycin having the formula



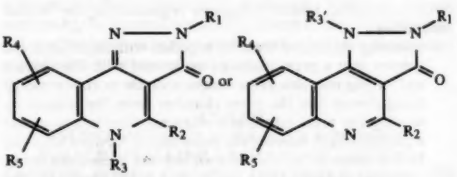
4,524,146

CERTAIN -2-HETEROCYCLE SUBSTITUTED PYRAZOLOQUINOLINES

Naokata Yokoyama, Cliffside, N.J., assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Dec. 8, 1982, Ser. No. 447,825
Int. Cl.³ A61K *31/505;* **C07D** *401/14*
U.S. Cl. 514—273 **18 Claims**

1. A compound of the formula



(IA) (IB)

wherein R_1 represents a five-membered unsaturated heterocyclic radical having two hetero atoms comprising one nitrogen atom and one member selected from nitrogen, sulfur and oxygen; or R_1 represents an unsaturated six membered heterocyclic radical having two nitrogen atoms; or R_1 represents a bicyclic benzo-fused six membered unsaturated heterocyclic radical having one or two nitrogen atoms; or R_1 represents any of said heterocyclic radicals mono- or di-substituted by lower alkoxy, lower alkyl or halogen; R_2, R_3 and R_3', each independently, represents hydrogen or lower alkyl; R_4 and R_5, each independently, represents hydrogen, lower alkyl, lower alk-

oxy, halogen or trifluoromethyl; or a pharmaceutically acceptable salt thereof.

17. An anxiolytic pharmaceutical composition suitable for oral or parenteral administration to mammals comprising an effective amount of a compound of claim 1 having anxiolytic activity in combination with one or more pharmaceutically acceptable carriers.

4,524,147

URACIL DERIVATIVES, PROCESS FOR PREPARING SAME, AND PHARMACEUTICAL COMPOSITIONS COMPRISING SAME

Isao Sakano; Tatsuro Yokoyama; Seitaro Kajiya, all of Yokohama; Yutaka Okazaki, Mobara; Hiroshi Tokuda, Mobara; Hiroshi Kawazura, Mobara; Mikio Kumakura, Mobara, and Akira Awaya, Yokohama, all of Japan, assignors to Mitsui Toatsu Chemicals, Incorporated, Tokyo, Japan

PCT No. PCT/JP82/00081, § 371 Date Nov. 16, 1982, § 102(e) Date Nov. 16, 1982, PCT Pub. No. WO82/03392, PCT Pub. Date Oct. 14, 1982

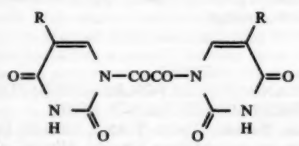
PCT Filed Mar. 24, 1982, Ser. No. 444,571

Claims priority, application Japan, Mar. 24, 1981, 56-41752

Int. Cl.³ A61K *31/505;* **C07D** *403/02*

U.S. Cl. 514—274 **9 Claims**

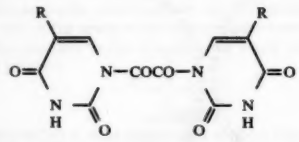
1. A uracil derivative having the general formula



(1)

where R represents a hydrogen atom or an alkyl radical having 1 to 4 carbon atoms.

6. A pharmaceutical composition having immunomodulatory activity which comprises an effective amount of a uracil derivative of the general formula



(1)

where R represents a hydrogen atom or an alkyl radical having 1 to 4 carbon atoms, and a pharmaceutically acceptable carrier.

4,524,148

ANTIMICROBIAL 8,9-DIHALOBENZO[IJ]QUINOLIZINE CARBOXYLIC ACIDS

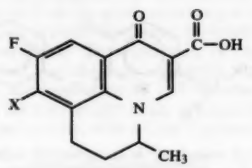
Richard M. Stern, Cottage Grove, Minn., assignor to Riker Laboratories, Inc., St. Paul, Minn.

Filed Nov. 6, 1981, Ser. No. 318,927

Int. Cl.³ A61K *31/44*

U.S. Cl. 514—294 **1 Claim**

1. A method of inhibiting the growth of microorganisms comprising contacting said microorganisms with an effective amount of a compound of the formula



wherein X is chloro or bromo, or a sodium salt thereof.

4,524,149

5-ALKANOYL-6-ALKYL-2(1H)-PYRIDINONES, THEIR PREPARATION AND THEIR CARDIOTONIC USE

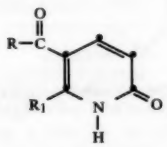
George Y. Lesher, Schodack, and Baldev Singh, East Greenbush, both of N.Y., assignors to Sterling Drug Inc., New York, N.Y.

Continuation-in-part of Ser. No. 357,872, Mar. 15, 1982, Pat. No. 4,412,077. This application Feb. 7, 1983, Ser. No. 464,690

Int. Cl.³ C07D *213/57, 213/50;* **A61K** *31/44*

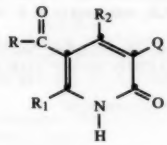
U.S. Cl. 514—350 **19 Claims**

1. A 5-(lower-alkanoyl)-6-(lower-alkyl)-2(1H)-pyridinone having the formula



where R and R_1 are each lower-alkyl.

13. The method for increasing cardiac contractility in a patient requiring such treatment which comprises administering orally or parenterally in a solid or liquid dosage form to such patient a cardiotonic composition comprising a pharmaceutically acceptable inert carrier and, as the active component thereof, a cardiotonically effective amount of 3-Q-4-R_2-5-(lower-alkanoyl)-6-(lower-alkyl)-2(1H)pyridinone having the formula



where Q is hydrogen or cyano, R and R_1 are each lower-alkyl and R_2 is hydrogen or methyl.

4,524,150

STABILIZED MIXTURES OF CARBAMATE INSECTICIDES AND SYNTHETIC PYRETHROIDS

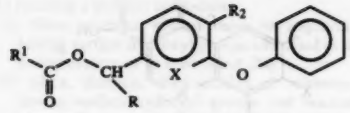
Orn Adalsteinsson, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 367,754, Apr. 12, 1982, abandoned. This application Mar. 3, 1983, Ser. No. 469,898

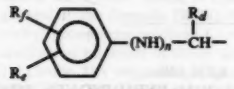
Int. Cl.³ A01N *43/08, 37/34, 47/10, 43/40*

U.S. Cl. 514—469 **18 Claims**

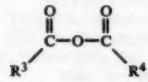
1. An improved insecticidal mixture of a carbamate insecticide and a resolved or partially resolved synthetic pyrethroid of the formula:



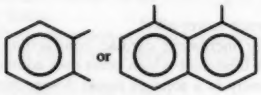
where R is H or cyano; R^1 is an optionally substituted alkyl cyclopropyl, alkenyl cyclopropyl, or R^1 has the formula:



wherein (1) R_d is C_1–C_6 alkyl, (2) R_e is H or halogen, (3) R_f is halogen, C_1–C_4 alkyl, C_1–C_4 haloalkyl having 1–4 halogen atoms, C_1–C_4 alkoxy, or C_1–C_4 haloalkoxy having 1–4 halogen atoms, and (4) n is 0 or 1; R^2 is H or F; and X is C or N; and where the weight ratio of carbamate to pyrethroid is about 1:1 to 50:1; wherein the improvement comprises the addition of 1–20% by weight, based on the weight of the carbamate, of an anhydride stabilizer of the formula:



where R^3 and R^4 independently are C_1–C_4 alkyl or phenyl, or R^3 and R^4 taken together are C_2–C_5 alkyl, C_2–C_4 alkenyl,



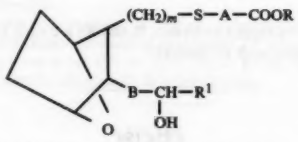
4,524,151

7-OXABICYCLOHEPTANE THIO ETHERS USEFUL AS CARDIOVASCULAR AGENTS

Jagabandhu Das, Plainsboro, and Martin F. Haslanger, Lambertville, both of N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed Nov. 14, 1983, Ser. No. 551,636
Int. Cl.³ C07D *307/00*; A61K *31/34*
U.S. Cl. 514—469 **16 Claims**

1. A compound of the structure



including all stereoisomers thereof, wherein m is 1 to 4, A is $(CH_2)_n$ or $-(CH_2)_n-$, $-CH{=}CH-$; n is 1 to 8; n' is 1 or 2; B is $-CH{=}CH-$ or $-(CH_2)_2-$; R is H, lower alkyl or alkali metal; and R^1 is lower alkyl, aryl, arylalkyl, cycloalkyl or cycloalkylalkyl; wherein the term lower alkyl or alkyl by itself or as part of another group is unsubstituted or substituted with halo, trifluoromethyl, alkoxy, aryl, alkyl-aryl, haloaryl, cycloalkyl, or alkylcycloalkyl; the term aryl by itself or as part of another group contains 6 to 10 carbons and is unsubstituted or substituted with lower alkyl, halogen or lower alkoxy; and the term cycloalkyl by itself or as part of another group contains 3 to 12 carbons and is unsubstituted or is substituted with 1 or 2 halogens, 1 or 2 lower alkyl groups and/or 1 or 2 lower alkoxy groups; and wherein $(CH_2)_m$ or $(CH_2)_n$ may be substituted by one or more lower alkyl substituents.

11. A method of inhibiting arachidonic acid-induced platelet aggregation and bronchoconstriction, which comprises administering to the circuitry system of a mammalian host an effective amount of a compound as defined in claim 1 or a pharmaceutically acceptable salt thereof.

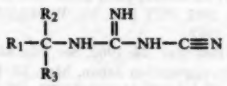
4,524,152

1-CYANO-3-(FLUOROALKYL)GUANIDINES FOR LOWERING BLOOD PRESSURE

Stephen J. Riggi, Fairport, N.Y., and Robert N. Haszeldine, Disley, England, assignors to Pennwalt Corporation, Philadelphia, Pa.

Filed Dec. 30, 1982, Ser. No. 454,759
Int. Cl.³ C07C *129/14*; A61K *31/155*
U.S. Cl. 514—609 **7 Claims**

1. The compound



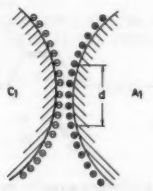
in which R_1, R_2 and R_3 are the same or different members of the class of hydrogen, fluorine, lower fluoroalkyl or lower alkyl or lower alkenyl provided that at least one member is fluorine or lower fluoroalkyl.

4,524,153

METHOD OF AND SYSTEM FOR REGENERATING POWDERY ION-EXCHANGE RESIN

Kiyomi Funabashi, Katsuta; Toshio Takagi, Hitachi; Fumio Kawamura, Hitachi, and Makoto Kikuchi, Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Oct. 30, 1981, Ser. No. 316,767
Claims priority, application Japan, Oct. 30, 1980, 55-153359
Int. Cl.³ B01D *15/06*
U.S. Cl. 521—26 **21 Claims**



1. A method of regenerating powdery ion-exchange resin particles, said particles having a size in the range of 2–90μ, comprising:

providing powdery ion-exchange resin comprising powdery cation-exchange resin and powdery anion-exchange resin coupled to each other;

immersing said coupled resin in an electrolytic solution, the ionic strength of said electrolytic solution being in a range of 5 to 15 and the specific gravity of the electrolytic solution being in a range between the specific gravity of the cation-exchange resin and the specific gravity of the anion-exchange resin;

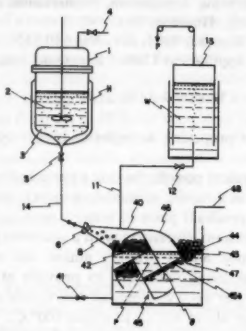
stripping apart and simultaneously separating said cation and anion-exchange resins in said solution; and

separately removing ions adherent to the cation-exchange resin and to the anion-exchange resin.

4,524,154
PRE-EXPANDING PROCESS AND APPARATUS FOR THE SAME

Hirofumi Maeda, Takatsuki; Kyoichi Nakamura, and Toshihiro Hatamoto, both of Osaka, all of Japan, assignors to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Sep. 6, 1984, Ser. No. 647,661
Claims priority, application Japan, Nov. 12, 1983, 58-212870
Int. Cl.³ C08J 9/22
U.S. Cl. 521—58 2 Claims



1. A process for preparing pre-expanded particles of a thermoplastic resin which comprises; heating under an elevated pressure an aqueous dispersion comprising thermoplastic resin particles containing a volatile foaming agent and an aqueous medium in a pressure vessel; releasing the dispersion from the pressure vessel into a space within a sealed low-pressure vessel wherein the pressure is lower than that in the pressure vessel and the space is sealed with an aqueous medium which exists in the lower portion of the vessel and communicates with the outside of the vessel, whereby expanding the thermoplastic resin particles to give pre-expanded particles; and sinking the resulting pre-expanded particles under the aqueous medium by means of a rotary impeller provided in the pressure vessel so that the pre-expanded particles are taken out of the low-pressure vessel through the aqueous medium towards the outside of the vessel, while recovering the foaming agent volatilized from the thermoplastic resin particles by discharging the foaming agent out of the space in the low-pressure vessel with controlling the pressure in the low-pressure vessel to substantially a given pressure.

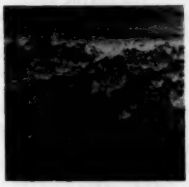
4,524,155
OPEN-CELL/MICROPOROUS MOLDED ARTICLE

Axel Walch, Frankfurt; Walter Seifried; Wolfgang Michel, both of Wiesbaden; Jürgen Kuhls, Burghausen, and Juergen Wildhardt, Huenstetten, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Division of Ser. No. 402,266, Jul. 27, 1982,. This application Sep. 13, 1984, Ser. No. 650,004
Claims priority, application Fed. Rep. of Germany, Jul. 28, 1981, 3129745
Int. Cl.³ C08F 9/28
U.S. Cl. 521—64 22 Claims

1. A process for the preparation of a microporous molded article having an open-cell structure and comprising a thermoplastic material which possesses an inherent latent structural convertibility and includes effective pores of a diameter in the range from about 0.002 to 10 μm, comprising the steps of:

providing a liquid solution of 1 to 50 weight percent strength, relative to its total weight, which contains as the dissolved constituent a polymer comprising at least about 70 percent by weight of a copolymer which comprises from about 20 to 80 percent by weight, relative to the total weight of the terpolymer, of copolmerized fluorinated olefin selected from the group consisting of ethylene and propylene, up to about 40 percent by weight, relative to the total weight of the terpolymer, of copolymerized olefin selected from the group consisting of ethylene and propylene, and from about 80 to 20 percent by weight, relative to the total weight of the copolymer, of copolymerized vinyl acetate, with at least 5 percent of the pro-



portion of acetate groups comprising the copolymer being converted by saponification into OH groups after copolymerization of the specified comonomers to form the terpolymer;

forming a shaped article from the liquid solution; and

coagulating the copolymer by treating the shaped article with a precipitating liquid to form a porous-structure, dimensionally stable molded article.

4,524,156
ASPHALT FOAM

Joseph A. Cogliano, Pasadena, Md., assignor to W. R. Grace & Co., Cambridge, Mass.

Filed Sep. 4, 1984, Ser. No. 646,779
Int. Cl.³ C08J 9/00
U.S. Cl. 521—83 6 Claims

1. A porous structure comprising a foam of closed cellular configuration formed from a substantially homogeneous blend of from about 80 to 120 parts by weight asphalt and from about 5 to 25 parts by weight of a polyvalent metal salt of anionic group containing polymers selected from polyvalent metal salt neutralized sulfonated polymers or neutralized carboxylated polymers; said foam having a bulk density of less than about 9 pounds per cubic foot and a pore volume of at least about 85 percent.

4,524,157
ADDUCTS AND POLYMER-POLYOLS USEFUL IN THE PREPARATION OF IMPROVED PLASTICS, INCLUDING POLYURETHANE FOAMS, ELASTOMERS AND THE LIKE

Paul Stamberger, Baltimore, Md., assignor to Union Carbide Corporation, Danbury, Conn.

Division of Ser. No. 279,318, Jul. 1, 1981,. This application Jun. 6, 1983, Ser. No. 501,693
Int. Cl.³ C08G 18/14
U.S. Cl. 521—156 9 Claims

1. A polyurethane which is the reaction product of a mixture comprising an organic polyisocyanate and an adduct formed by reaction of a polyol with a co-reactant, the co-reactant being selected from the group consisting of:

(A) a half-ester co-reactant formed by 1:1 molar reaction between:

(1) at least one polyhydroxyhydrocarbon having a molecular weight below about 200, and

(2) at least one polycarboxylic compound selected from the group consisting of dicarboxylic acids, dicarboxylic acid anhydrides, polycarboxylic acids having at least three carboxylic carbon atoms, and polycarboxylic anhydrides having at least three carboxylic carbon atoms,

in which at least one of the carboxylic carbon atoms of the

poly-carboxylic compound remains unreacted after the 1:1 molar reaction;

(B) an epoxy co-reactant selected from the group consisting of diepoxides, polyepoxides having more than two epoxy groups and mixtures,

in which at least one of the epoxy groups in the epoxy co-reactant remains unreacted after reaction with the polyol; and

(C) a half-ester co-reactant formed by 1:1 molar reaction between:

(1) at least one polycarboxylic compound selected from the group consisting of dicarboxylic acids, dicarboxylic acid anhydrides, polycarboxylic acids having at least three carboxylic carbon atoms, and polycarboxylic anhydrides having at least three carboxylic carbon atoms, and

(2) at least one epoxy compound selected from the group consisting of diepoxides and polyepoxides having at least three epoxy groups,

in which at least one of the epoxy groups of the epoxy compound remains unreacted after the 1:1 molar reaction.

4,524,158

METHOD FOR DISPERSING FIBRILLATED FIBERS

Alan G. Barber, Woodbury, Conn., assignor to Union Carbide Corporation, Danbury, Conn.

Continuation-in-part of Ser. No. 361,546, Mar. 24, 1982, Pat. No. 4,439,561. This application Feb. 10, 1984, Ser. No. 578,856

Int. Cl.³ B01F *3/00, 3/08*

U.S. Cl. 523—130 **25 Claims**

1. A method for forming a suspension of a fibrillated fiber in an alcoholic medium which comprises (i) providing a mixture comprising alcohol, water, and dispersing agent, wherein the concentration of the water is at least about 15 wt.%; (ii) dispersing an undispersed fibrillated fiber in the mixture of (i) to provide a fibrillated fiber predispersion; and (iii) diluting the predispersion of (ii) with alcohol to provide a final dispersion of fibrillated fiber in an alcoholic medium.

4,524,159

LEAK STOPPING COMPOSITION AND METHOD

Alan G. Barber, Woodbury, Conn., assignor to Union Carbide Corporation, Danbury, Conn.

Continuation-in-part of Ser. No. 361,546, Mar. 24, 1982, Pat. No. 4,439,561. This application Feb. 10, 1984, Ser. No. 578,857

The portion of the term of this patent subsequent to Apr. 3, 2001, has been disclaimed.

Int. Cl.³ C09K *3/12*

U.S. Cl. 523—177 **38 Claims**

1. A composition for the stopping of leaks in a coolant system which comprises a suspension in a liquid medium of a fibrillated fiber in an amount which is effective for the stopping of leaks.

4,524,160

DIRECTLY MOLDABLE RESIN COMPOSITIONS FOR COMPOSITE PLASTICS

Nobuhisa Maeda, Takada; Tadashi Sakairi, and Tamotsu Wakahata, both of Katano, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Japan

Continuation of Ser. No. 367,226, Apr. 8, 1982, abandoned. This application Jan. 27, 1984, Ser. No. 577,948

Claims priority, application Japan, Apr. 9, 1981, 56-54136

Int. Cl.³ C08K *9/00, 7/00*

U.S. Cl. 523—200 **4 Claims**

1. In a directly moldable resin composition for composite plastics which comprises 50 to 98.5 percent by volume of a mixture of pellets of polypropylene with an average size not smaller than 2.0 mm and particles of polypropylene having an average size ranging from 30 to 40 up to 500 microns, and correspondingly from 50 to 1.5 percent by volume of at least one filler selected from the group consisting of particulate inorganic fillers having an average size ranging from 1 to 50 microns and fibrous fillers having an aspect ratio not smaller than 5, the improvement in which said at least one filler is coated with a surface active agent having a hydrophili-oleophilic balance below 13 and said surface active agent is present in an amount of 0.15 to 14.0 percent by volume of said at least one filler.

4,524,161

PROCESS FOR PREPARING AQUEOUS BINDER COMPOSITIONS

Martin P. O. Feuerhahn, Amsterdam, Netherlands, assignor to Shell Oil Company, Houston, Tex.

Filed Aug. 15, 1984, Ser. No. 640,915

Claims priority, application United Kingdom, Aug. 24, 1983, 8322710

Int. Cl.³ C09D *3/58, 3/66, 5/02*

U.S. Cl. 523—414 **9 Claims**

1. A process for preparing an aqueous binder composition which comprises

(a) dispersing a pigment powder having a particle size less than 20 micrometers in a liquid, solvent-free epoxy resin,

(b) dispersing the resultant paste in water,

(c) reacting the resultant dispersion with a secondary amine or a secondary amine and a primary amine, the amount of amine or amines being sufficient to provide at least one N—H function per epoxy group of the epoxy resin, at a temperature from about 40° C. to about 100° C.,

(d) neutralizing the resulting suspension of epoxy-amine adduct coated particles, and, as desired,

(e) adjusting the concentration of the resulting dispersion within the range 35 to 75%w solids by addition of water.

4,524,162

LOW SHRINKING CURABLE MOLDING COMPOSITIONS CONTAINING A POLY(ACRYLATE)

Linda A. Domeier, Somerville, N.J., assignor to Union Carbide Corporation, Danbury, Conn.

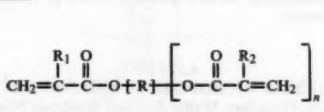
Filed May 26, 1983, Ser. No. 498,494

Int. Cl.³ C08K *3/34, 3/12, 3/40*; C08F *283/00*

U.S. Cl. 523—438 **31 Claims**

1. A curable molding composition suitable for the preparation of fiber reinforced molded articles by a rapid cure, injection molding process, comprising a mixture of:

(a) a poly(acrylate) characterized by the following empirical formula:



wherein R is the hydroxy-free residue of an organic polyhydric alcohol which contains alcoholic hydroxyl groups bonded to different carbon atoms, R_1 and R_2 are independently hydrogen or methyl, and n is 1 to 3;

(b) an ethylenically unsaturated monomer which is soluble in and copolymerizable with (a);

(c) a crosslinkable vinyl monomer having a reactivity ratio (r_1) with styrene of greater than one and at least one of the following:

(i) a second crosslinkable vinyl monomer having a reactivity ratio (r_1) with styrene of greater than one;

(ii) an epoxy compound having at least one 1,2-epoxy group per molecule; and

(iii) an unsaturated fatty acid ester; and

(d) a thermoplastic polymer low profile additive which is soluble in the mixture of (a), (b) and (c), said composition having a viscosity of from about 10 to about 1000 centipoise.

4,524,163
CEMENTIFEROUS COMPOSITIONS

Geoffrey Bradley, Oberiamstadt, Fed. Rep. of Germany; John T. Hoarty, and Ian M. Howarth, both of Cheshire, England, assignors to Internationale Octrooi Maatschappij "Octropa" B.V., London, England

Filed Jun. 11, 1984, Ser. No. 619,209

Claims priority, application United Kingdom, Jun. 21, 1983, 8316819

Int. Cl.[3] **C04B** *7/35, 13/24;* **C08K** *5/05;* **C08L** *33/02*

U.S. Cl. 524—5 **6 Claims**

1. A plasticiser additive composition comprising an aqueous solution of a copolymer or a soluble salt thereof, comprising an ethylenically polymerisable carboxylic acid and an ethylenically unsaturated monomer having a hydroxyl functional group, which monomer is copolymerisable with said acid, the copolymer having a molecular weight in the range 1000 to 15000 and from 10 to 90% by weight of the copolymer of an accelerator additive selected from triethanolamine or salts thereof and water soluble thiocyanates, said accelerator additive functioning with the copolymer to provide early strength gain when said composition is used to plasticize a cementiferous composition.

4,524,164
THERMOSETTING ADHESIVE RESINS

Tito Viswanathan, and Thomas Richardson, both of Madison, Wis., assignors to Chemical Process Corporation, Brookfield, Wis.

Continuation-in-part of Ser. No. 557,739, Dec. 2, 1983,. This application Mar. 23, 1984, Ser. No. 592,566

Int. Cl.[3] **C08L** *3/02*

U.S. Cl. 524—14 **17 Claims**

1. A method of preparing a thermosetting resin for binding lignocellulosic materials together to form useful products which consisting essentially of heating an aqueous sugar or starch solution and a crosslinking agent selected from urea, phenol and mixtures of urea and phenol in the presence of an inorganic acid or its ammonium salt and a metal ion catalyst at a temperature between about 50° to about 200° C. for about 30 minutes to about 18 hours to obtain a partially polymerized fusible resin and then adding an organic acid anhydride to the fusible resin prior to application to the lignocellulosic materials.

4,524,165
STABILIZED COPOLYESTERETHER COMPOSITIONS SUITABLE FOR OUTDOOR APPLICATIONS

Harry R. Musser; Thomas H. Strickland, and Joseph S. Zannucci, all of Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Oct. 24, 1983, Ser. No. 544,035

Int. Cl.[3] **C08K** *5/34, 5/07, 5/10*

U.S. Cl. 524—99 **27 Claims**

1. A highly weatherable copolyesterether composition having a 264 psi heat deflection temperature greater than 60° C. and an inherent viscosity of about 0.8 to about 1.5, said copolyesterether comprising

A. a 100 mole % dicarboxylic acid component comprising about 80–100 mole % 1,4-cyclohexanedicarboxylic acid having a trans isomer content of at least 70% and about 0–20 mole % of a second acid selected from the group consisting of aliphatic dicarboxylic acids having 3 to 12 carbon atoms,

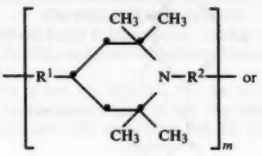
B. a 100 mole % glycol component comprising about 70–95 mole % 1,4-cyclohexanedimethanol and about 5–30 mole % of a polyalkylene ether glycol having a molecular weight of about 600 to about 3000,

C. a stabilizing effective amount of the combination of

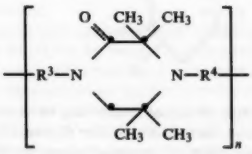
1. at least one hindered phenolic antioxidant,

2. at least one ultraviolet light stabilizing compound compatible with said copolyesterether, and

3. at least one hindered amine light stabilizing compound having the formulae



I



II

wherein m and n are each integers of from 1 to 20, R^1, R^2, R^3 and R^4 are each independently selected from hydrogen, substituted or unsubstituted alkyl having 1 to 20 carbon atoms, aryl having 6 to 22 carbon atoms, alkylene having 1 to 20 carbon atoms, cycloalkylene having 3 to 12 carbon atoms, hydroxyalkyl having 1 to 18 carbon atoms, and esters of said hydroxyalkyl; and alkylenecarboxylic acid having 2 to 18 carbon atoms and esters, amides and metal salts of said alkylenecarboxylic acid.

4,524,166
PRIMARY OR SECONDARY AMINO SUBSTITUTED DIBENZO DIOXAPHOSPHEPINS AND DIOXAPHOSPHOCINS

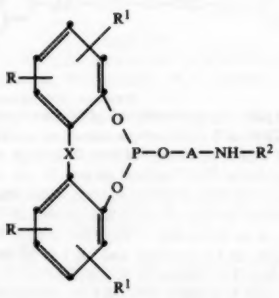
John D. Spivack, and Stephen D. Pastor, both of Spring Valley, N.Y., assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation-in-part of Ser. No. 437,930, Nov. 1, 1982, abandoned. This application Sep. 14, 1984, Ser. No. 651,185

Int. Cl.[3] **C07F** *9/15;* **C08G** *59/02, 63/68, 69/42;* **C08K** *5/32*

U.S. Cl. 524—117 **25 Claims**

1. A compound of the formula



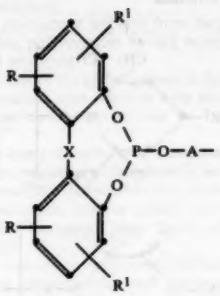
wherein

R and R^1 independently are hydrogen, alkyl of 1 to 18 carbon atoms, cycloalkyl of 5 to 6 carbon atoms, phenyl or phenyl substituted with alkyl of 1 to 18 carbon atoms;

A is alkylene of 1 to 6 carbon atoms or cycloalkylene of 5 to 6 carbon atoms;

X is a direct bond or alkylidene of 1 to 12 carbon atoms; and

R^2 is hydrogen, alkyl of 1 to 12 carbon atoms or the group



15. A composition of matter comprising an organic material subject to oxidative, thermal and actinic degradation stabilized with an effective stabilizing amount of a compound of claim 1.

16. A composition of claim 15, wherein the organic material is a synthetic polymer.

4,524,167

POLYMERIC HINDERED PHOSPHONATE STABILIZERS

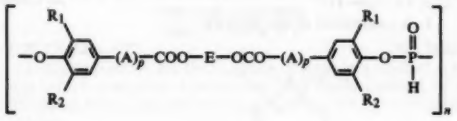
John D. Spivack, Spring Valley, and Stephen D. Pastor, Yonkers, both of N.Y., assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation-in-part of Ser. No. 582,151, Feb. 24, 1984, abandoned, which is a continuation of Ser. No. 459,844, Jan. 21, 1983, abandoned. This application Sep. 27, 1984, Ser. No. 655,277

Int. Cl.³ C08K *5/51;* **C07F** *9/06;* **C08G** *79/00*

U.S. Cl. 524—121 **14 Claims**

1. A polymeric phosphonate having the repeating structural unit of the formula



wherein

R_1 and R_2 are independently alkyl of 4 to 12 carbon atoms, cycloalkyl of 5 to 6 carbon atoms, or aralkyl of 7 to 15 carbon atoms, or alkaryl of 7 to 15 carbon atoms,

A is alkylene of 1 to 4 carbon atoms,

E is alkylene of 2 to 12 carbon atoms, phenylene, phenylene substituted by one or two alkyl groups of 1 to 9 carbon atoms; or is the group —T(OT)$_t$— where T is ethylene, propylene or 1,4-butylene, and t is 1 to 10; or is the group —G—X—G— where G is alkylene of 2 to 4 carbon atoms, and X is sulfur or —N(R)— where R is hydrogen or alkyl of 1 to 8 carbon atoms,

p is 0 or 1; and

n is 2 to 50.

9. A composition of matter comprising an organic material subject to oxidative, thermal and actinic degradation stabilized with an effective stabilizing amount of a polymer according to claim 1.

10. A composition according to claim 9, wherein the organic material is a synthetic polymer.

4,524,168

PROCESS FOR THE MASS COLORATION OF POLYMERS

Arnold Wick, Therwil, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

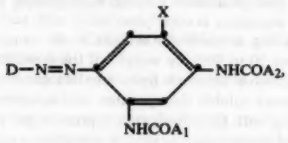
Filed Nov. 8, 1982, Ser. No. 439,684

Claims priority, application Switzerland, Nov. 18, 1981, 7411/81

Int. Cl.³ C08K *5/34*

U.S. Cl. 524—190 **9 Claims**

1. A process for the mass coloration of organic polymers, which process comprises incorporating into said polymer in the melt an azo compound of the formula I



(I)

wherein d is the radical of a carbocyclic aromatic or heterocyclic aromatic diazo component, X is hydrogen, halogen, methyl or methoxy, and each of A_1 and A_2 independently of the other is C_1–C_6alkyl, phenyl or phenyl which is substituted by halogen, C_1–C_4alkyl, methoxy, ethoxy, phenyl or phenoxy.

4,524,169

ELASTIC MOLDING MATERIAL, METHOD OF PRODUCING AND SHAPING AND USE THEREOF

Siegfried Wolff, Bornheim-Merten, and Paul Golombeck, Bornheim, both of Fed. Rep. of Germany, assignors to Degussa Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

Filed Feb. 13, 1984, Ser. No. 579,914

Claims priority, application Fed. Rep. of Germany, Feb. 17, 1983, 3305373

Int. Cl.³ C08K *5/54*

U.S. Cl. 524—263 **9 Claims**

1. Elastic molding material comprising at least one thermoplastic rubber and at least one silicate filler in an amount of 1–300 parts by weight, a processing or plasticizing oil in an amount of 0–100 parts by weight, and a sufficient amount of at least one stabilizer, which imparts resistance to aging, fatigue, oxidation, ozone or light, said molding material containing at least one organosilicon compound, having at least one alkoxysilyl group, in an amount of 0.1–25 parts by weight, all said parts by weight being based on 100 parts by weight of thermoplastic rubber.

4,524,170

FLAME RETARDANT FINISHING COMPOSITION FOR SYNTHETIC TEXTILES

Charles N. Berczi, Ormskirk, and Karen Hall, Bury, both of England, assignors to Milliken Research Corporation, Spartanburg, S.C.

Division of Ser. No. 488,346, Apr. 25, 1983, , which is a division of Ser. No. 367,413, Apr. 12, 1982,. This application Sep. 13, 1983, Ser. No. 531,716

Int. Cl.³ C08K *5/06*

U.S. Cl. 524—371 **2 Claims**

1. A flame-retardant finishing composition for conferring wash-fast fire-retardant and after-glow suppressant properties on synthetic textiles, comprising from 40 to 55 parts decabromodiphenyl oxide, 15 to 30 parts water-insoluble metal borate salt selected from zinc borate and calcium borate, and 10 to 30 parts water-resistant polymeric binder selected from self cross-linkable acrylic/vinylidene chloride copolymer and an acrylic polymer cross-linked with melamine or urea formaldehyde per 100 parts of dry solids.

4,524,171

PREPARATION OF AN AROMATIC POLYIMIDE ACID BY SOLUTION POLYMERIZATION USING PROPYLENE GLYCOL METHYL ETHER

Kiran R. Bakshi, Murrysville; Walter P. Barie, Glenshaw, and Edward T. Sabourin, Allison Park, all of Pa., assignors to Gulf Oil Corporation, Pittsburgh, Pa.

Filed Aug. 20, 1984, Ser. No. 642,518

Int. Cl.³ C08L 79/08

U.S. Cl. 524—376 9 Claims

1. A method for preparing a solution of an aromatic polyimide acid which comprises:

reacting an aromatic dianhydride with an approximately equimolar quantity of an aromatic diamine in the presence of a solvent comprising propylene glycol methyl ether.

4,524,172

PREPARATION OF AQUEOUS SILICONE DISPERSIONS FOR TREATING TEXTILES

Helmut Steinberger; Helmut Kirschnek, and Josef Pfeiffer, all of Leverkusen, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Nov. 14, 1983, Ser. No. 550,834

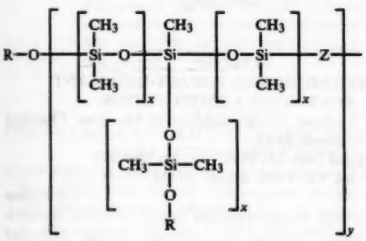
Claims priority, application Fed. Rep. of Germany, Dec. 4, 1982, 3244955

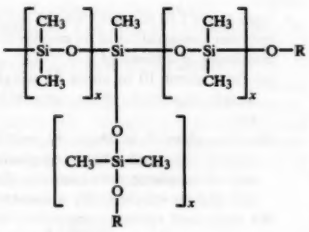
Int. Cl.³ C08K 5/01; C08L 83/06

U.S. Cl. 524—506 6 Claims

1. An aqueous dispersion by weight approximately consisting essentially of

(A) 1–30 parts by weight of a polyether-siloxane, crosslinked via alkylenoxy bridges, of the general formula





in which

Z is an oxyalkyleneoxy radical with 2–8 C atoms,

R is an alkyl-terminated polyether radical,

x is an interger between 2 and 25, and

y is an integer between 1 and 9,

(B) 1–40 parts of a high-molecular polyethylene with an average molecular weight of above 15,000–50,000,

(C) 1–10 parts of an anionic emulsifier,

(D) 0–15 parts of a non-ionic emulsifier, and

(e) 2–97 parts of water.

4,524,173

AQUEOUS COATING COMPOSITION COMPRISING A DISPERSION OF POLYMERIZED UNSATURATED MONOMERS, A NONIONIC SURFACTANT AND CROSSLINKING AGENT

John W. Rehfuss; Louis S. Hazelwood, and Martin B. Price, all of Louisville, Ky., assignors to Reliance Universal, Inc., Louisville, Ky.

Continuation of Ser. No. 469,417, Feb. 24, 1983, abandoned, which is a continuation-in-part of Ser. No. 348,286, Feb. 12, 1982, abandoned. This application Jul. 24, 1984, Ser. No. 633,083

Int. Cl.³ C08L 61/28

U.S. Cl. 524—512 8 Claims

1. An aqueous coating composition consisting essentially of,

(A) about 52–78.5% by weight of a dispersion of polymerized ethylenically unsaturated monomers including a plurality of non-functional and functional monomers together having a combined glass transition temperature in the range of about 26°–60° C., the functional monomers being reactable with external crosslinking agents in the presence of an acid catalyst to form a crosslinked coating at temperatures below about 66° C. and consisting of (a) an hydroxyl functionality for crosslinking agents in the range of about 3–10% by weight of the total monomer composition, (b) an amide functionality for rheological characteristics in the range of about 4–9% by weight of the total monomer composition and (c) an acid monomer in the range of about 0.2–0% by weight of the total monomer composition;

(B) about 1.5–8% by weight of a surfactant, 50–100% of the particle charges of which are nonionic, the amount of surfactant in the composition being sufficient to render the composition dispersion stable throughout the pH range of about 1.0–10;

and (C) about 20–40% by weight of crosslinking agent comprised of a substituted amide alone or in mixture with up to about 50% by weight of a high solids, highly alkylated polymeric methoxy methylated substituted amine, the amide and amine being alkoxylated and/or etherified, as needed, to impart characteristics of water miscibility and stability to gellation upon acid catalysis for extended time periods.

4,524,174

REINFORCED ELASTOMER PRODUCTS

Stewart C. Watson, Williamsville, N.Y., assignor to Watson Bowman Associates, Amherst, N.Y.

Continuation of Ser. No. 326,058, Nov. 30, 1981, Pat. No. 4,473,680, which is a continuation of Ser. No. 010,252, Feb. 8, 1979, Pat. No. 4,305,172, which is a division of Ser. No. 888,660, Mar. 21, 1978, Pat. No. 4,210,698, which is a continuation-in-part of Ser. No. 616,140, Sep. 24, 1975, Pat. No. 4,080,086. This application May 29, 1984, Ser. No. 614,956

Int. Cl.³ C08L 9/02, 55/02

U.S. Cl. 524—566 9 Claims

1. A process for enhancing the resistance of an elastomer body to deformation, said process comprising the step of providing an elastomeric load bearing device comprising an interior core section having an elastomeric binder and an exterior marginal section surrounding the interior section consisting of an elastomer, said process including the step of incorporating into the interior core section a sufficient amount of crushed, hard reinforcing elements such that deformation of the device is prevented or minimized under compression loading, said marginal section remaining substantially free of the reinforcing elements.

4,524,175

WATER-IN-OIL EMULSIONS OF HYDROPHOBE ASSOCIATION POLYMERS

Frederick W. Stanley, Jr., Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed Apr. 16, 1984, Ser. No. 600,879
Int. Cl.[3] C08K 5/05, 5/06; C08L 33/26
U.S. Cl. 524—831 15 Claims

1. A stable water-in-oil emulsion comprising (1) a continuous oil phase and dispersed therein (2) a discontinuous aqueous phase containing a hydrophobe associative copolymer of an ethylenically unsaturated water-soluble monomer and an ethylenically unsaturated monomer having a hydrophobic moiety having at least 8 carbons capable of associating with a similar hydrophobic moiety or a hydrophobic moiety of a water-soluble surfactant.

4,524,176

ACRYLIC MODIFIED POLYESTER ANAEROBIC ADHESIVE

Roscoe A. Pike, Windsor, and Foster P. Lamm, South Windsor, both of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Mar. 21, 1984, Ser. No. 591,736
Int. Cl.[3] C08L 67/06; C08G 63/46
U.S. Cl. 525—12 7 Claims

1. An anaerobic adhesive acrylate comprising the reaction product of a hydroxyl containing polyester and a glycidyl acrylate wherein the ratio of —OH in the polyester to glycidyl groups in the acrylate is from about 1:0.4 to about 1:1, and the reaction product is capable of polymerizing in an anaerobic environment.

4,524,177

USE OF 1,4-DIHYDROXYNAPHTHALENE IN THE HARDENING OF ETHYLENICALLY UNSATURATED COMPOUNDS

Werner Klöker, and Klaus Kraft, both of Krefeld, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Nov. 23, 1983, Ser. No. 554,569
Claims priority, application Fed. Rep. of Germany, Dec. 3, 1982, 3244814
Int. Cl.[3] C08L 67/06
U.S. Cl. 525—14 9 Claims

1. A process for the hardening of acrylic resins or unsaturated polyester resins comprising hardening the resin in the presence of:

(i) from 0.02 to 1% by weight of 1,4-dihydroxynaphthalene,

(ii) from 0.0015 to 0.15% by weight, calculated on the basis of the metal, of at least one iron compound soluble in the resins to be hardened, and

(iii) from 0.25 to 7% by weight of at least one peroxide catalyst,

the percentage of (i), (ii) and (iii) being based on the resin to be hardened.

4,524,178

COMPOSITIONS OF UNSATURATED POLYESTERS OR POLYESTERAMIDES AND EFFICIENT FLEXIBILIZERS THEREFOR

Robert E. Hefner, Jr., Lake Jackson, Tex.; Patrick H. Martin, Danville, Calif., and Gregory A. Stevens, Lake Jackson, Tex., assignors to The Dow Chemical Company, Midland, Mich.

Filed Jun. 9, 1983, Ser. No. 502,870
Int. Cl.[3] C08L 67/06, 77/12, 75/04
U.S. Cl. 525—28 36 Claims

1. A flexibilizer/alkyd composition which does not phase separate upon curing and consists essentially of

a. an unsaturated polyester and/or polyesteramide alkyd which includes no terminal polycycloalkenyl groups, and

b. a total of from about 1 to about 20 parts by weight of a flexibilizer consisting essentially of one or more urethane oligomers per hundred parts of said alkyd, said oligomers each having at least one vinyl-reactive end group and being an addition product of a polyether glycol with an unsaturated isocyanate or with a diisocyanate and an unsaturated compound comprising an —NCO or —CH_2OH group,

c. from 0 to about 400 parts by weight of a non-resinous vinyl monomer per hundred parts of said alkyd,

with the proviso that, when said alkyd comprises an unsaturated polyester, either the parts by weight of said oligomers per hundred parts of said alkyd is not in excess of $11+9a/(a+e)$, where a and e are the parts by weight, respectively, of said polyesteramide and said polyester in said composition, or

said unsaturated compound is an unsaturated isocyanate, an alkenylphenol, a hydroxyalkylacrylate-initiated polyglycol or N-methylolacrylamide.

4,524,179

POLYPHENYLENE ETHER COMPOSITIONS HAVING IMPROVED PROCESSABILITY

James M. Vaughan, Williamstown, W. Va., assignor to Borg-Warner Chemicals, Inc., Parkersburg, W. Va.

Filed Aug. 24, 1984, Ser. No. 643,939
Int. Cl.[3] C08L 71/02, 71/04
U.S. Cl. 525—68 3 Claims

1. In a composition comprising a polyphenylene ether resin and a high impact polystryene, the improvement wherein an ethylene oxide-propylene oxide block copolymer is included in an amount effective to reduce adhesion to metals.

4,524,180

RUBBER-MODIFIED, IMPACT-RESISTANT POLYMERIC COMPOSITIONS

Yun C. Sun, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed May 21, 1982, Ser. No. 380,594
Int. Cl.[3] C08L 25/06, 53/02, 51/04
U.S. Cl. 525—71 6 Claims

1. An improved rubber-modified impact resistant monovinylidene aromatic polymer composition having dispersed therein:

I. from about 1 to about 40 weight percent based on weight polymer composition of an improved rubber composition consisting of a blend of:

(a) from about 10 to about 95 weight percent based on weight improved rubber composition of polybutadiene; and

(b) from about 5 to about 90 weight percent based on weight improved rubber composition of block copolymer of butadiene with monovinylidene aomatic monomer and/or ethylenically unsaturated nitrile monomer;

the improved rubber composition being in the form of discrete particles having occluded therein and grafted thereto amounts of monovinylidene aromatic polymer; and

II. from about 5 to about 35 weight percent based on weight polymer composition of emulsion produced rubber in the form of particles, said particles having a bimodal size distribution, with the further limitation that the improved rubber-modified, impact-resistant monovinylidene aromatic polymer composition comprises from about 5 to about 40 weight percent total rubber based on weight polymer composition.

4,524,181

CURABLE EPOXY COMPOSITIONS AND CURED RESINS OBTAINED THEREFROM

Randall E. Adam, Woodbury, and William J. Schultz, Vadnais Heights, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Aug. 11, 1983, Ser. No. 522,420
Int. Cl.³ C08L *63/02*
U.S. Cl. 525—107 **15 Claims**

1. A composition of matter that is storage stable against separation of phases comprising:

a. 1.0 part of a curable epoxide group-containing compound having one or more oxirane groups, and

b. 0.05 to 1.0 part of colloidally-dispersed, elastomeric particles that are insoluble in said epoxide compound, comprising,

(1) 75 to 98 percent by weight of an elastomeric polymer having a glass transition temperature of 25° C. or less and is selected from polymers derived from at least one (1) ethylenically-unsaturated group-containing monomer and from (2) diisocyanates and coreactive difunctional hydrogen compounds, said at least one monomer being in situ polymerized in said curable epoxide group-containing compound to a polymer which is insoluble in said epoxide compound and

(2) 25 to 2 percent by weight of a stabilizer having the formula PQ, in which

Q is a polymeric segment that has a molecular weight of at least 1000 and is soluble in said epoxide group-containing compound, and

P is selected from

(a) a functional group covalently attached to Q and also attached to the elastomeric particle during particle growth by formation of a covalent or ionic bond with the elastomeric particle, and

(b) a polymeric segment that has a molecular weight of at least 1000 and that becomes absorbed into the elastomeric particle because it is soluble in said elastomeric polymer of said monomer composition but insoluble in said epoxide group-containing compound.

4,524,182

USE OF CROSS-LINKED EPOXIDIZED FATTY OILS IN VULCANIZING POLYMERS

Armin Bauer, Bruehl; Helfried Ehrend, Speyer; Klaus Morche, Mannheim; Karl Nützel, Neulussheim, and Michael Sauerbier, Bruehl-Rohrhof, all of Fed. Rep. of Germany, assignors to Rhein-Chemie Rhein GmbH, Mannheim, Fed. Rep. of Germany

Filed Feb. 21, 1984, Ser. No. 581,878
Claims priority, application Fed. Rep. of Germany, Mar. 3, 1983, 3307421
Int. Cl.³ C08G *59/20;* **C10M** *3/20;* **C08K** *5/11*
U.S. Cl. 525—120 **6 Claims**

1. A method of processing an elastomeric polymer comprising the steps of preparing and vulcanizing a mixture of said polymer and an effective amount of an active processing composition which comprises cross-linked epoxidized esters of at least dihydric alcohols and unsaturated fatty acids.

4,524,183

HIGH SOLIDS ACRYLIC COATING SYSTEMS

Robert J. Weber, Jr., Belle Mead, N.J., assignor to Union Carbide Corporation, Danbury, Conn.

Filed Oct. 31, 1983, Ser. No. 547,015
Int. Cl.³ C08L *61/28*
U.S. Cl. 525—162 **9 Claims**

1. In the method of preparing high solids coating compositions comprising an acrylic resin, crosslinking agent, reactive diluent and crosslinking catalyst, the improvement which comprises using as the reactive diluent a low molecular weight, hydroxyl-containing acrylic polymer prepared by contacting one or more acrylic or methacrylic acid alkyl esters at least one of which is an hydroxyalkyl ester of acrylic or methacrylic acid with an anionic polymerization initiator in an inert solvent at a temperature of about 15° to about 20° C. wherein the alkyl groups contain 1 to about 6 carbons and the initiator concentration is greater than about 5 mole% based on the total monomer charge and then quenching the polymerization reaction.

4,524,184

IMPACT POLYMER COMPOSITION

James G. Murray, East Brunswick, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Apr. 23, 1984, Ser. No. 603,052
Int. Cl.³ C08L *51/04, 53/02*
U.S. Cl. 525—314 **9 Claims**

1. A high clarity impact polymer composition having an Izod Impact Strength of greater than 0.3 ft-lb/in, consisting essentially of polyparamethystyrene having a weight average molecular weight of about 50k–400k and styrene-butadiene block copolymer having a weight average molecular weight of about 50k–250k prepared by dissolving the block copolymer in paramethylstyrene monomer and polymerizing the paramethylstyrene, said block copolymer being present in the amount of about 5–20 percent by weight as concentrated rubbery domains within the polyparamethylstyrene.

4,524,185

HALOGEN-CONTAINING ELASTOMER COMPOSITION, AND VULCANIZING PROCESS USING DIMERCAPTOTHIODIAZOLE AND DITHIOCARBAMATE CURING SYSTEM

Robert F. Hinderer, Ann Arbor, Mich., assignor to Federal-Mogul Corporation, Southfield, Mich.

Filed Mar. 7, 1983, Ser. No. 472,432
Int. Cl.³ C08F *8/34, 8/30*
U.S. Cl. 525—328.2 **22 Claims**

1. A vulcanizable composition comprising an active halogen-containing elastomer and a curing system consisting essentially of dimercaptothiodiazole present in an amount of from about 0.05 to about 3.0 parts by weight per 100 parts of elastomer, and a dithiocarbamate type accelerator present in an amount of from about 0.5 to about 5.0 parts by weight per 100 parts of elastomer, said dithiocarbamate type accelerator selected from the group consisting of bismuth dimethyldithiocarbamate, cadmium diamyldithiocarbamate, cadmium diethyldithiocarbamate, copper dimethyldithiocarbamate, lead diamyldithiocarbamate, lead dimethyldithiocarbamate, selenium diethyldithiocarbamate, selenium dimethyldithiocarbamate, tellurium diethyldithiocarbamate, zinc diamyldithiocarbamate, zinc di-n-butyldithiocarbamate, zinc diethyldithiocarbamate, zinc dimethyldithiocarbamate, zinc-N-ethyl phenyldithiocarbamate, zinc-N-pentamethylene dithiocarbamate, and pentamethylene-ammonium-N-pentamethylene dithiocarbamate, as well as mixtures thereof.

4,524,186

PROCESS FOR PRODUCING WATER-ABSORBING RESINS

Hiroshi Nagase, Tokyo, Japan, assignor to Fujikura Kasei Co., Ltd., Tokyo, Japan

Filed Jul. 27, 1983, Ser. No. 517,838
Claims priority, application Japan, Oct. 6, 1982, 57-174564
Int. Cl.³ C08F *8/12*
U.S. Cl. 525—328.8 **22 Claims**

1. A process for producing an absorbent resin, which comprises polymerizing 1 mole of a lower alkyl acrylate and 0.07 to 0.5 mole of a polyhydric alcohol ester of a monoethylenically unsaturated carboxylic acid in an aqueous medium in the absence of an emulsifying agent, saponifying the resulting polymer with a basic substance in a water-lower alcohol medium to produce a gel-like saponification product, and then neutralizing the saponification product with an acid.

4,524,187

ISOBUTYLENE-TRIENE COPOLYMERS CROSS-LINKABLE UNDER AMBIENT HUMIDITY CONDITIONS, A PROCESS FOR THEIR PREPARATION, AND INTERMEDIATE SUITABLE FOR THIS PURPOSE

Alberto Greco, Dresano; Guglielmo Bertolini, Pavia, and Omero Zavattini, Curtatone, all of Italy, assignors to Anic S.p.A., Palermo, Italy and Dow Corning Corporation, Midland, Mich.

Filed Dec. 9, 1982, Ser. No. 448,263

Claims priority, application Italy, Dec. 11, 1981, 25517 A/81; Oct. 11, 1982, 23702 A/82

Int. Cl.³ C08F *8/34*

U.S. Cl. 525—332.1 21 Claims

1. Copolymers of isobutylene and at least one triene selected from the group consisting of 1,3,7-octatriene, 5-methyl-1,3,6-heptatriene, hexatriene, dicyclopentadiene and allylcyclopentadiene, of molecular weight variable between 1000 and 1,000,000 and cross-linkable under ambient humidity conditions, characterised by the presence of pendant functions of type

where R is a monovalent hydrocarbon radical of 1 to 10 carbon atoms, X is halogen or an alkoxy, phenoxy, thioalkoxy, acyloxy, amino, aminoxy, oxime or silanoxy radical, and a is 0, 1 or 2 wherein the silicon atoms are bonded to the copolymer through reaction with the non-terminal double bond or the vinyl bond on said triene.

4,524,188

SYNTHESIS AND COPOLYMERIZATION OF ASYMMETRIC POLYMERS

Joseph P. Kennedy, and Misao Hiza, both of Akron, Ohio, assignors to University of Akron, Akron, Ohio

Filed May 2, 1983, Ser. No. 490,554

Int. Cl.³ C08F *110/10*

U.S. Cl. 525—333.7 10 Claims

1. An asymmetrically telechelic polymer, comprising:

A—PIB—B

wherein PIB is a polyisobutylene backbone, and A and B are different, wherein A is selected from the group consisting of phenyl and substituted phenyl, wherein said substitution may be at any position and is selected from the group consisting of vinyl, $—SO_3^{\ominus}$, —OH, $—NO_2$, $—NH_2$, and alkyl groups having from 1 to 10 carbon atoms; and wherein B is selected from the group consisting of methacrylate, hydroxyl, and vinylidene.

4,524,189

PREPARATION OF CHLORINATED POLYOLEFINS

James B. Akers, Jr., Baton Rouge, La.; Douglas E. Leng, Midland, Mich., and Randall J. Normand, Plaquemine, La., assignors to The Dow Chemical Company, Midland, Mich.

Filed Mar. 20, 1984, Ser. No. 591,653

Int. Cl.³ C08F *8/22*

U.S. Cl. 525—35 G 6 Claims

1. A method for preparing a chlorinated polyolefin, comprising the steps of:

(a) suspending a particulate mass of a polyolefin or chlorinated polyolefin in an aqueous medium;

(b) injecting a submerged jet of chlorine gas traveling at a linear velocity of at least about sixty feet per second into the suspension of the polyolefin or chlorinated polyolefin, thereby atomizing the chlorine, and chlorinating the polyolefin or chlorinated polyolefine; and

(c) separating and recovering the chlorinated polyolefin product.

4,524,190

PROCESS FOR PREPARATION OF CROSS-LINKED POLY(TRI-N-BUTYLTIN)METHACRYLATE WITH SIMULTANEOUS PARTICLE SIZE REDUCTION

D. Gerald Glasgow, Centerville, and Joseph Satanek, Xenia, both of Ohio, assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed May 14, 1984, Ser. No. 609,940

Int. Cl.³ C08F *8/44*

U.S. Cl. 525—370 5 Claims

1. A process for the simultaneous preparation and particle size reduction of poly(tri-n-butyltin) methacrylate comprising the steps of:

combining a cross-linked polymethacrylic acid, tributyl tin oxide, and a poly solvent capable of causing hydraulic shattering of crosslinked polymers; and

esterifying said combined elements until a desired quantity of poly(tri-n-butyltin) methacrylate product is obtained.

4,524,191

POLYESTER COMPOSITION AND PRODUCTION THEREOF

Katuyuki Nakamura, Miyazaki, and Kazuya Neki, Shizuoka, both of Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Japan

Continuation of Ser. No. 252,501, Apr. 8, 1981, abandoned. This application Jan. 31, 1983, Ser. No. 462,636

Claims priority, application Japan, Sep. 30, 1980, 55-136048; Nov. 22, 1980, 55-164775

Int. Cl.³ C08L *67/02, 77/06;* C08K *7/14*

U.S. Cl. 525—425 24 Claims

1. An injection moldable polyester composition having an increased crystallization rate comprising:

(A) 100 parts by weight of a polyester comprising mainly polyethylene terephthalate and having a reduced specific viscosity ($\eta sp/c$) of at least 0.3; and

(B) from 0.1 to 5 parts by weight of at least one wholly aromatic polyamide, as a nucleating agent, having a melting point of at least 300° C. and containing at least one of (1) a diamine group represented by the formula (I)

$$—NH—Ar_1—NH— \quad (I)$$

wherein Ar_1 represents a divalent aromatic group; (2) a dicarboxylic acid group represented by the formula (II)

$$—CO—Ar_2—CO— \quad (II)$$

wherein Ar_2 represents a divalent aromatic group; and (3) an aminocarboxylic acid group represented by the formula (III)

$$—NH—Ar_3—CO— \quad (III)$$

wherein Ar_3 represents a divalent aromatic group, linked to each other through amido bonds,

wherein said component (B) is uniformly dispersed as a distinct phase in said component (A), after blending with component (A), in a substantial size of 50 μm or less, and a half width of an exothermic peak of the polyester composition measured in a crystallization temperature range by a differential scanning calorimeter at a cooling rate of 10° C./min is 15° C. or less per 8 mg of component (A), whereby the crystallization rate of said polyester comprising mainly polyethylene terephthalate is increased.

4,524,192
FLEXIBLE COATING COMPOSITIONS

Delores J. Alexander, 29060 Lone Elm La., Southfield, Mich. 48076; Kenneth R. Kurple, 9533 Springborn Rd., Anchorville, Mich. 48004, and Panagiotis I. Kordomenos, 42758 Elizabeth Cir., Mt. Clemens, Mich. 48044

PCT No. PCT/US83/01596, § 371 Date Oct. 13, 1983, § 102(e) Date Oct. 13, 1983, PCT Pub. No. WO85/01694, PCT Pub. Date Apr. 25, 1985
PCT Filed Oct. 13, 1983, Ser. No. 553,322
Int. Cl.³ C08L *75/06, 67/02*
U.S. Cl. 525—440 19 Claims

1. A flexible coating composition which is characterized in that it comprises:

(A) hydroxy-containing urethane modified polyester (i) having a number average molecular weight ($\overline{M}_n$) of between about 1000 and about 10,000, (ii) having a hydroxyl number of between about 30 and about 200, and (iii) containing between about 1 and about 10 urethane groups per molecule, and being made from reactants comprising:

(1) urethane modified diol made by reacting:

(a) a diol, and

(b) diisocyanate,

wherein said diol and said diisocyanate are reacted in a molar ratio of from about 4:1 to about 4:3;

(2) polyol comprising at least about 5 weight percent triol; and

(3) acid component selected from dicarboxylic acids and anhydrides thereof;

(B) amine-aldehyde crosslinking agent; and

(C) 0–60 weight percent, based on the total weight of (A) and (B) of said composition, of a linear polyurethane having a number average molecular weight of between about 15,000 and about 40,000.

4,524,193
MODACRYLIC SYNTHETIC FIBER HAVING AN EXCELLENT DEVITRIFICATION PREVENTING PROPERTY AND A PROCESS FOR PREPARING THE SAME

Kaoru Yamazaki, Akashi; Shunichiro Kurioka, Kobe; Mitsuya Sakata, Akashi, and Takahiro Ogawa, Takasago, all of Japan, assignors to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 264,618, May 18, 1981, abandoned. This application Sep. 21, 1982, Ser. No. 420,882
Claims priority, application Japan, May 28, 1980, 55-71655; May 28, 1980, 55-71656
Int. Cl.³ C08F *2/26, 2/06*
U.S. Cl. 526—79 12 Claims

1. A process for preparing a modacrylic synthetic fiber which comprises polymerizing monomers consisting essentially of acrylonitrile, at least one of vinyl chloride and vinylidene chloride, and a sulfo group-containing vinyl monomer to produce a copolymer consisting essentially of 40 to 65% by weight of acrylonitrile, 31 to 59.9% by weight of at least one of vinyl chloride and vinylidene chloride and 0.3 to 4% by weight of a sulfo group-containing vinyl monomer, the ratio of the reactivity of said sulfo group-containing vinyl monomer to that of acrylonitrile being at least 1, under the condition satisfying the following equation:

$$33<Y-X<75$$

wherein X is a percentage of the amount of a polymer produced at the time of starting the addition of the sulfo group-containing vinyl monomer to the amount of the whole polymer to be produced, and Y is a percentage of the amount of a polymer produced at the time of finishing the addition of the sulfo group-containing vinyl monomer to the amount of the whole polymer to be produced, said polymerizing being selected from the group consisting of emulsion polymerizing and solution polymerizing, and spinning the resulting copolymer.

4,524,194
PROCESS FOR THE POLYMERIZATION OF VINYLIDENE FLUORIDE, IN AN AQUEOUS SUSPENDING MEDIUM, IN THE PRESENCE OF BIS(ALKYL) CARBONATE CHAIN REGULATORS

Joseph Dumoulin, Wezembeek-Oppem, Belgium, assignor to Solvay & Cie. (Societe Anonyme), Brussels, Belgium

Filed Feb. 29, 1984, Ser. No. 585,222
Claims priority, application France, Mar. 10, 1983, 83 04106
Int. Cl.³ C08F *2/38, 114/22*
U.S. Cl. 526—84 19 Claims

1. Process for the polymerisation, in an aqueous suspending medium, of vinylidene fluoride with the aid of an oil-soluble free radical polymerisation initiator in the presence of a suspending agent and a chain regulator, characterised in that the chain regulator is a bis(alkyl)carbonate, the alkyl groupings of which contain not more than five carbon atoms and the initiator, the suspending agent and the chain regulator are present in effective amounts; the molecular weight of the vinylidene fluoride polymer produced being dependent on the amount of chain regulator present, and the amount of chain regulator used in the process being selected according to the polymer molecular weight desired.

4,524,195
PROCESS AND CATALYST FOR OLEFIN POLYMERIZATION

Joel L. Martin, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Oct. 19, 1983, Ser. No. 543,582
Int. Cl.³ C08F *4/02, 10/00*
U.S. Cl. 526—114 29 Claims

1. A process for preparing a solid catalyst suitable for the polymerization of alpha-olefins comprising

(1) forming a solution by using an organophosphate or organophosphoramide to cause the dissolution of at least one metal halide selected from the group consisting of the completely halogenated halides of rare earth metals having atomic numbers in the range of 57 to 71 in a dry organic liquid and then

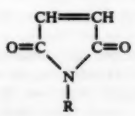
(2) reacting said solution with a halogen compound of a transition metal to produce said solid.

4,524,196
PROCESS FOR PREPARING "LIVING" POLYMERS

William B. Farnham, and Dotsevi Y. Sogah, both of Wilmington, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 389,111, Jun. 17, 1982, Pat. No. 4,414,372. This application Nov. 7, 1983, Ser. No. 549,408
The portion of the term of this patent subsequent to Nov. 8, 2000, has been disclaimed.
Int. Cl.³ C08F *4/16*
U.S. Cl. 526—190 48 Claims

1. In a process comprising polymerizing the monomer selected from the group consisting of $CH_2{=}C(Y)X$,



and mixtures thereof wherein:

X is —CN, —CH=CHC(O)X′ or —C(O)X′;

Y is —H, —CH_3, —CN or —CO_2R, provided, however, when X is CH=CHC(O)X′, Y is —H or —CH_3;

X′ is —$OSi(R^1)_3$, —R, —OR or —NR′R″;

each R^1, independently, is hydrocarbyl of up to 20 carbon atoms;

R is hydrocarbyl of up to 20 carbon atoms, optionally containing one or more ether oxygen atoms within aliphatic segments thereof, and optionally containing one or more functional substituents that are unreactive under polymerizing conditions; and

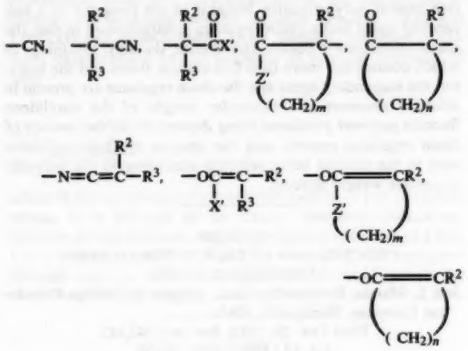
each of R' and R'' is independently selected from C_{1-4} alkyl

by contacting the one or more monomers under polymerizing conditions with:

(i) the initiator of the formula $(R^1)_3MZ$ wherein:

R^1 is as defined above;

Z is an activating substituent selected from the group consisting of



and mixtures thereof

X' is as defined above for the monomer;

each of R^2 and R^3 is independently selected from H and hydrocarbyl of up to 20 carbon atoms, optionally containing one or more ether oxygen atoms within aliphatic segments thereof, and optionally containing one or more functional substituents that are unreactive under polymerizing conditions; and

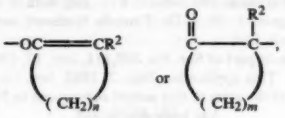
Z' is O or NR';

m is 2, 3 or 4;

n is 3, 4 or 5; and

M is Si, Sn, or Ge,

provided, however when Z is



M is Sn or Ge; and

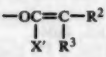
(ii) a co-catalyst which is a source of bifluoride ions $HF_2^{\ominus}$, to produce "living" polymer having repeat units of the one or more monomers, said process further characterized in that:

(a) R^1 is H, provided that at least one R^1 group is not H; and/or

(b) R is a polymeric radical containing at least 20 carbon atoms and optionally containing one or more ether oxygen atoms within aliphatic segments thereof and optionally containing one or more functional substituents that are unreactive under polymerizing conditions; and/or

(c) at least one of any R group in the monomer contains one or more reactive substitutents of the formula $-Z'(O)-C-C(Y^1)=CH_2$ wherein Y^1 is H or CH_3 and Z' is as defined above; and/or

(d) the initiator is of the formula $(R^1)_2M(Z^1)_2$ or $O[M(R^1)_2Z^1]_2$ wherein R^1 and M are as defined above and Z^1 is

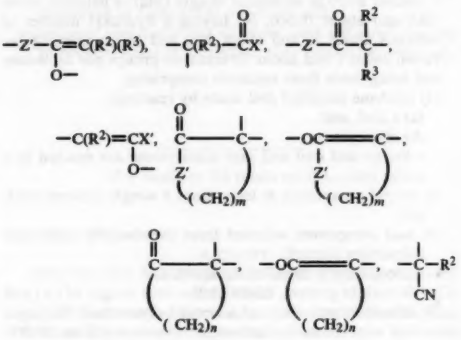


wherein X', R^2 and R^3 are as defined above; and/or

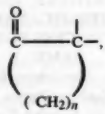
(e) at least one of any R, R^2 and R^3 in the initiator contains one or more initiating substitutents of the formula $-Z^2-M(R^1)_3$ wherein

M and R^1 are as defined above; and

Z^2 is a diradical selected from the group consisting of



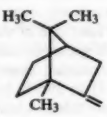
and mixtures thereof, wherein R^2, R^3, X', Z', m and n are as defined above, provided, however, when Z^2 is



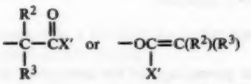
M is Sn or Ge; and/or

(f) Z is selected from the group consisting of —SR, $-OP(NR'R'')_2$, $-OP(OR^1)_2$, $-OP[OSi(R^1)_3]_2$ and mixtures thereof, wherein R, R^1, R' and R'' are as defined above; and/or

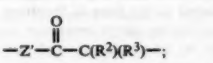
(g) R^2 and R^3 taken together are



provided, however, Z is



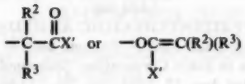
and/or Z^2 is



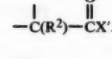
and/or

(h) X' and either R^2 or R^3 taken together are

provided, however, Z is



and/or Z^2 is



4,524,197

PROCESS FOR MAKING VINYLIDENE FLUORIDE CONTAINING FLUOROELASTOMERS

Ausat A. Khan, Newark, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Aug. 28, 1984, Ser. No. 645,095
Int. Cl.³ C08F *2/00, 14/18*
U.S. Cl. 526—206 **12 Claims**

1. A process for making a fluoroelastomer which comprises feeding to an aqueous polymerization medium in a reactor about 25–75% by weight of the total monomers, vinylidene fluoride, at least one other fluorine-containing ethylenically unsaturated monomer containing at least as many fluorine atoms as carbon atoms and copolymerizable with vinylidene fluoride, an inorganic free-radical initiator, a chain transfer agent added in an amount sufficient to maintain a concentration in the aqueous polymerization medium of from about 0.5×10^{-3} to 5×10^{-3} moles per 100 grams of total monomers, and from about 0.02–2% by weight, based on the weight of the aqueous medium, of a surfactant which is a compound having the formula:

$$F-CF_2CF_2-_nCH_2CH_2-OSO_3M$$

where n is an integer of from 2–8 or mixtures thereof and M is an alkali metal cation, hydrogen or ammonium, maintaining the pH of the aqueous polymerization medium within a range of from about 2.5–5, continuously removing a portion of the resulting fluoroelastomer latex from the polymerization reactor and adding to said portion a mineral acid or a carboxylic acid containing no more than 5 carbon atoms and having a pK of less than about 4.2 to lower the pH to about 2 or below and a water-soluble salt of an alkaline earth metal to coagulate the fluoroelastomer and recovering the fluoroelastomer from the latex.

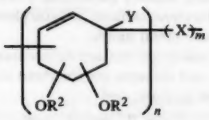
4,524,198

POLY(1,2-DISUBSTITUTED CYCLOHEXA-3,5-DIENES

Denis G. H. Ballard, Littleton; Andrew Courtis, Hightown, and Ian M. Shirley, Barnton, all of England, assignors to Imperial Chemical Industries Limited, London, England

Division of Ser. No. 433,097, Oct. 6, 1982, Pat. No. 4,476,296. This application Mar. 2, 1984, Ser. No. 585,373
Claims priority, application United Kingdom, Oct. 6, 1981, 8130114; Oct. 6, 1981, 8130115; Oct. 6, 1981, 8130116
Int. Cl.³ C08F *32/06*
U.S. Cl. 526—292.1 **5 Claims**

1. A polymeric composition comprising a polymer which has a structure which may be represented by general formula:



wherein the cyclohexenylene ring and the residue X, where X is present, may vary from unit to unit along the polymer chain; each R^2, which may be the same or different, is hydrogen, acyl or hydrocarbyloxyketo; X, where present, is the residue of a polymerisable vinyl comonomer, the OR^2 groups are on adjacent carbon atoms, Y is hydrogen, halogen or an alkyl group having up to four carbon atoms; n and m are whole numbers; and the ratio of n:m lies in the range 1:0 to 1:1000.

4,524,199

STABLE POLYMERIC DISPERSION AND METHODS FOR MAKING

Kar P. Lok, Toronto, and Christopher K. Ober, Oakville, both of Canada, assignors to Xerox Corporation, Stamford, Conn.

Filed Nov. 9, 1983, Ser. No. 549,933
Int. Cl.³ C08G *3/20*; C08F *2/22*
U.S. Cl. 527—313 **21 Claims**

1. A stable dispersion comprising a nonionic polar dispersion medium having dispersed therein monodispersed particles comprising a thermoplastic resin core substantially insoluble in said dispersion medium formed from a styrene or butylmethacrylate containing monomer or mixtures thereof having irreversibly anchored thereto a nonionic amphipathic steric stabilizer comprising a graft copolymer having a portion formed from a styrene or butylmethacrylate containing monomer or mixtures thereof and a portion formed from hydroxyethyl cellulose, hydroxypropyl cellulose, hydroxybutyl methyl cellulose, hydroxypropyl methyl cellulose, ethyl cellulose or cellulose propionate.

4,524,200

GRANULAR POLY(ARYLENE SULFIDE) RECOVERY USING EVAPORATION

Fred T. Sherk; Afif M. Nesheiwat, and Guy Senatore, all of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Continuation of Ser. No. 423,592, Sep. 27, 1982, abandoned. This application May 18, 1984, Ser. No. 611,573
Int. Cl.³ C08G *75/14*
U.S. Cl. 528—388 **23 Claims**

1. A method for recovery of granular poly(arylene sulfide) from a slurry comprising granular poly(arylene sulfide), polar organic solvent, alkali metal halide, poly(arylene sulfide) oligomers, and unreacted reactants, said method comprising:

(a) treating a polymeric reaction mixture comprising polar organic solvent and molten poly(arylene sulfide) in the presence of an amount of a liquid soluble in the polar organic solvent but said liquid not itself a solvent for poly(arylene sulfide) said amount sufficient to cause a phase separation of molten poly(arylene sulfide) from polar organic solvent upon reducing the temperature of said reaction mixture sufficiently to produce a slurry of granular poly(arylene sulfide) in polar organic solvent;

(b) reducing the temperature of said reaction mixture sufficiently to produce a slurry of granular poly(arylene sulfide) in polar organic solvent said slurry also containing alkali metal halide, poly(arylene sulfide) oligomers, unreacted reactants and liquid soluble in the polar organic solvent;

(c) heating said slurry of (b) under pressure conditions suffi-

cient to evaporate polar organic solvent, liquid soluble in the polar organic solvent and volatile impurities at a temperature below the normal boiling point of said polar organic solvent, thereby producing a dried mixture comprising poly(arylene sulfide), poly(arylene sulfide) oligomers, and alkali metal halide,

(d) reslurrying said dried mixture with water to extract alkali metal halide and disperse poly(arylene sulfide) oligomers in a reslurried mixture, and

(e) classifying reslurried mixture through a classifying means thereby recovering granular poly(arylene sulfide) on said classifying means and passing a first filtrate comprising poly(arylene sulfide) oligomers and aqueous alkali metal halide solution through said classifying means.

4,524,201

REACTIVE ORGANO TITANATE CATALYSTS

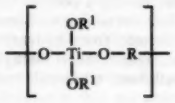
Austin E. Barnabeo, and Michael J. Keogh, both of Bridgewater, N.J., assignors to Union Carbide Corporation, Danbury, Conn.

Division of Ser. No. 334,673, Dec. 28, 1981, Pat. No. 4,415,710. This application Aug. 2, 1983, Ser. No. 518,428

Int. Cl.³ C08G *79/00*

U.S. Cl. 528—395 **16 Claims**

1. A preformed, reactive catalyst, capable of crosslinking an alkylene-alkyl acrylate copolymer to a crosslinked product while catalyzing the crosslinking reaction, which is the reaction product of a mixture containing an organo titanate, a polyol having at least two primary hydroxy groups attached to non-adjacent carbon atoms and a monohydric alcohol, said reactive catalyst containing the repeating unit:



wherein R is a divalent hydrocarbon radical and each R^1 is a monovalent hydrocarbon radical.

4,524,202

PROCESS FOR THE PREPARATION OF 1,1'-DIACETALS

Lutz-Friedjan Tietze, Goettingen, and Roland Fischer, Noertenhardenberg, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jun. 24, 1982, Ser. No. 391,655

Claims priority, application Fed. Rep. of Germany, Jul. 17, 1981, 3128271

Int. Cl.³ C07H *1/00*

U.S. Cl. 536—18.5 **8 Claims**

8. A process for the production of 1-0-(1'-methoxy methyl)-2,3,4,6-tetra-0-acetyl-β-D-glucopyranose which comprises reacting a compound of the formula

wherein

R^{16} is acetyl, R^{15} is H and

R^{14} is O-Si$(CH_3)_3$

with an acetal of the formula

in the presence of trimethyl silyl trifluoromethane sulphonate as catalyst in a suitable solvent.

4,524,203

4-(4-PYRIDINYL)ISATOIC ANHYDRIDE

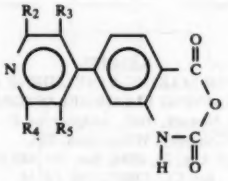
Thomas J. Walter, and Paul F. Ranken, both of Baton Rouge, La., assignors to Ethyl Corporation, Richmond, Va.

Filed Aug. 15, 1983, Ser. No. 523,462

Int. Cl.³ C07D *265/26, 215/20*

U.S. Cl. 544—94 **2 Claims**

1. A 4-(4-pyridinyl)isatoic anhydride corresponding to the formula:



wherein R_2, R_3, R_4, and R_5 are independently selected from hydrogen and phenyl, phenoxy phenyl aryl, and halo substituents.

4,524,204

PROCESS FOR REPLACING ANIONS OR ORGANIC CATIONIC SALTS

Karl H. Drexhage, Siegen, Fed. Rep. of Germany, assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Aug. 4, 1980, Ser. No. 174,959

Int. Cl.³ C07D *265/38, 311/60, 335/02, 409/06*

U.S. Cl. 544—103 **22 Claims**

1. A process for replacing said recovering the anion of a first organic cationic salt, said process comprising the steps of:

(a) preparing a first dispersion or solution by combining

(i) a first acid-stable, organic cationic salt having an anion,

(ii) a water-immiscible organic solvent, and

(iii) the acid of a solubilizing anion, thereby forming (1) a second organic cationic salt having said solubilizing anions, and (2) an acid of said anion of said first organic cationic salt, and (3) an excess, if any, of an acid of said solubilizing anion, said second organic cationic salt having a solubility in 2-ethoxyethanol:2-methoxyethyl acetate (1:1 by weight) at least 5 percent greater than said first organic cationic salt;

(b) removing the acid formed in said first dispersion or solution by, at least once

(i) mixing water with said first dispersion or solution to form a mixture comprising (1) said first dispersion or solution, which contains said second organic cationic salt having said solubilizing anion, and (2) a second solution comprising water, at least a portion of the acid formed in said first dispersion or solution, and at least a portion of any excess of said acid of said solubilizing anion, and

(ii) separating said first dispersion or solution from said second solution; and

(c) recovering said second organic cationic salt having said solubilizing anion from said first dispersion or solution.

4,524,205

PROCESS FOR THE PREPARATION OF 1-AMINO-1,3,5-TRIAZINE-2,4(1H,3H)-DIONES

Gerhard Bonse, Cologne; Reinhard Lantzsch, Leverkusen; Henning Dörr, Bergisch-Gladbach; Wolfgang Kreiss, Cologne; Karlfried Dickoré, Wuppertal; Klaus Ditgens, Wuppertal, and Eckart Kranz, Wuppertal, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

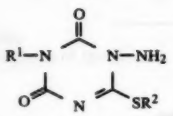
Filed Oct. 21, 1983, Ser. No. 544,334

Claims priority, application Fed. Rep. of Germany, Nov. 6, 1982, 3241114; Sep. 16, 1983, 3333447

Int. Cl.³ C07D *251/26, 251/38*

U.S. Cl. 544—223 **17 Claims**

1. A process for the preparation of a 1-amino-1,3,5-triazine-2,4(1H,3H)-dione of the formula



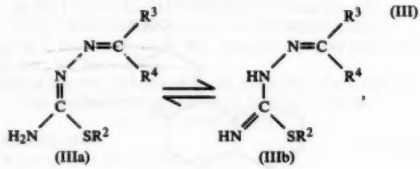
in which

R^1 is a C_{5-8}-cycloaliphatic hydrocarbon radical or a benzyl or phenyl radical, and

R^2 is a C_{1-6}-aliphatic hydrocarbon radical, comprising in a first stage at a temperature from about 0° to 100° C. reacting an isocyanate of the formula

R^1—NCO

with an isothiosemicarbazone of the tautomeric formulas

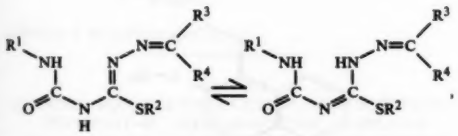


(III)

(IIIa) (IIIb)

in which

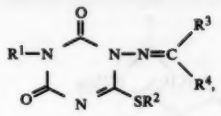
R^3 and R^4 each independently is hydrogen, C_{1-4}-alkyl, C_{5-7}-cycloalkyl, benzyl or C_{8-10}-aryl, thereby to form a urea derivative of the tautomeric formulas



(IV)

(IVa) (IVb)

in a second stage at a temperature between about −50° and 0° C. reacting the urea derivative with phosgene ($COCl_2$) in the presence of an auxiliary organic base and in the presence of a diluent, at least about 2 mols of phosgene and at least about 2 mols of the auxiliary base being used per mol of urea derivative, thereby to form a 1-alkylideneamino-1,3,5-triazine-2,4(1H,3H)-dione of the formula V



(V)

and in a third stage converting the 1-alkylideneamino group to a 1-amino group.

4,524,206

1-HETEROARYL-4-(2,5-PYRROLIDINEDION-1-YL)ALKYL)PIPERAZINE DERIVATIVES

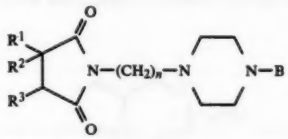
James S. New, and Joseph P. Yevich, both of Evansville, Ind., assignors to Mead Johnson & Company, Evansville, Ind.

Filed Sep. 12, 1983, Ser. No. 531,519

Int. Cl.³ C07D *403/14, 31/495*

U.S. Cl. 544—230 **23 Claims**

1. A compound having Formula I



I

wherein

R^1 is C_{1-4} alkyl, trifluoromethyl, Z-substituted phenyl with Z being hydrogen or halogen or R^1 can be taken together with R^2 as a C_{4-5} alkylene bridge incorporating a fused Z-substituted phenyl ring system, Z being hydrogen or halogen or R^1 can be taken together with R^3 to form a fused cyclohexenyl ring or an X^1–X^4 tetra-substituted phenyl ring with X^1–X^4 being independently selected from hydrogen, halogen or nitro;

R^2 is C_{1-4} alkyl, Z-substituted phenyl with Z as defined above, or absent when R^1 and R^3 form a fused phenyl ring system, or taken together with R^1 to form an alkylene bridge as defined above;

R^3 is H_2 or can be taken together with R^1 to form a fused phenyl ring as defined above;

B is an R^4,R^5-disubstituted heterocyclic ring system chosen from the group consisting of benzoisothiazole, pyridine, and pyrimidine, with R^4 and R^5 being independently selected from C_{1-4} alkyl, C_{1-4} alkoxy, C_{1-4} alkylthio, cyano, halogen, or hydrogen; and

n is 2–4;

or a pharmaceutically acceptable acid addition salt thereof.

4,524,207

PROCESS FOR PREPARING SUBSTITUTED 1,3-DIHYDROSPIRO[BENZO(C)THIOPHENE]S

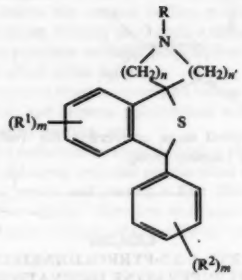
Helen H. Ong, Whippany; Vernon B. Anderson, High Bridge, both of N.J., and James A. Profitt, Goshen, Ind., assignors to Hoechst-Roussel Pharmaceuticals Inc., Somerville, N.J.

Division of Ser. No. 313,169, Oct. 20, 1981, Pat. No. 4,409,229, which is a continuation-in-part of Ser. No. 165,344, Jul. 2, 1980, abandoned, which is a continuation of Ser. No. 948,908, Oct. 5, 1978, abandoned, which is a continuation-in-part of Ser. No. 857,177, Dec. 2, 1977, abandoned. This application Jul. 21, 1983, Ser. No. 515,969

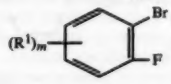
Int. Cl.³ C07D *495/10, 513/10*

U.S. Cl. 546—17 **1 Claim**

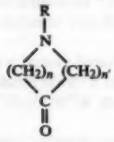
1. A process for preparing a compound of the formula



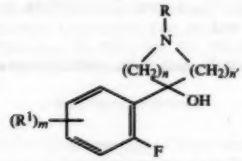
or an optical antipode or pharmaceutically acceptable salt thereof in which R is loweralkyl or phenylloweralkyl, R^1 and R^2 are the same or different and each can be hydrogen, loweralkyl, loweralkoxy, trifluoromethyl, chlorine, bromine, fluorine, methylenedioxy or loweralkylthio and m, n and n' are integers from 1 to 3; and the sum of n and n' is 3 or 4 which comprises converting a 2-bromo-fluorobenzene of the formula



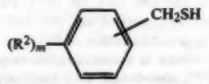
to its 2-lithio derivatives with a loweralkyllithium at a temperature ranging from −80° to −20° C., in a suitable solvent such as ether, hexane or tetrahydrofuran, reacting the 2-lithio derivative with a cycloazalkanone of the formula



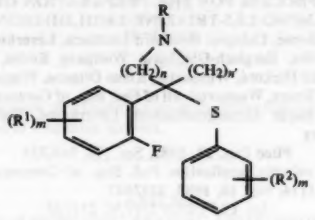
in which R is loweralkyl or phenylloweralkyl to provide a phenylcycloazalkanol of the formula



reacting the phenylcycloazalkanol with a benzylmercaptan of the formula



in the presence of glacial acetic acid and boron trifluoride etherate at a temperature of from ambient to 100° C. to provide a 4-benzylthio-4-phenylcycloazalkane of the formula



and cyclizing the 4-benzylthio-4-phenylcycloazalkane.

4,524,208

PROCESS FOR THE PREPARATION OF LYSERGIC ACID ESTERS

Gerhard Sauer, and Gregor Haffer, both of Berlin, Fed. Rep. of Germany, assignors to Schering Aktiengesellschaft, Berlin and Bergkamen, Fed. Rep. of Germany

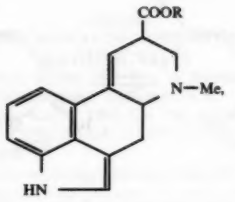
Filed May 26, 1983, Ser. No. 498,427

Claims priority, application Fed. Rep. of Germany, May 26, 1982, 3220119

Int. Cl.³ C07D *457/04, 457/06*

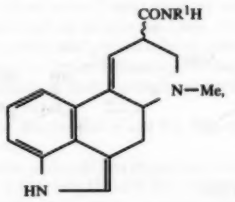
U.S. Cl. 546—69 **10 Claims**

1. A process for preparing a lysergic acid ester of the formula



wherein

R is alkyl of up to 3 carbon atoms, comprising reacting a lysergic acid or isolysergic acid amide of the formula



wherein

R is hydrogen or lower alkyl of up to 4 carbon atoms optionally substituted by an OH-group, or a reaction compatible salt thereof with an acid,

with an alcohol of the formula ROH wherein R is alkyl of up to 3 carbon atoms, at a temperature of 0° to 65° C. for a period of 2 to 30 hours in the presence of an acid or an acidic ion exchange resin at a pH value of about 0–1.

4,524,209

6-FLUORO-3-[3-(1-HETEROCYCLO)PROPYL]-1,2-BENZISOXAZOLES

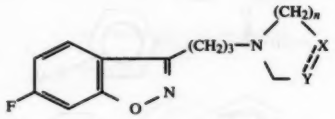
Larry Davis, Sergeantsville, and Joseph T. Klein, Somerville, both of N.J., assignors to Hoechst-Roussel Pharmaceuticals Inc., Somerville, N.Y.

Division of Ser. No. 366,245, Apr. 9, 1982, Pat. No. 4,458,075. This application Apr. 23, 1984, Ser. No. 603,255

Int. Cl.³ C07D *413/06*

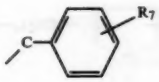
U.S. Cl. 546—148 **4 Claims**

1. A compound of the formula



wherein

X is a group of the formula



wherein

R_7 is halogen and the dotted line represents an additional carbon to carbon bond or X and Y taken together form a phenyl nucleus

n is 1, 2 or 3; the optical antipode thereof or the pharmaceutically acceptable acid additional salt thereof.

4,524,210

2,6-DI(T-BUTYL)-4-HYDROXY-4-PYRIDYL-2,5-CYCLOHEXADIEN-1-ONE INTERMEDIATES

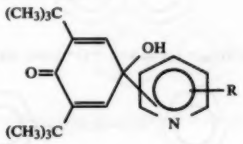
George G. I. Moore, Houlton, Wis., assignor to Riker Laboratories, Inc., St. Paul, Minn.

Division of Ser. No. 324,062, Nov. 23, 1981, Pat. No. 4,414,217. This application Aug. 12, 1983, Ser. No. 522,386

Int. Cl.³ C07D *213/04*

U.S. Cl. 546—340 **2 Claims**

1. A compound of the formula:



wherein R is hydrogen or methyl.

4,524,211

PROCESS FOR THE PRODUCTION OF SUBSTITUTED PHOSPHONIC AND PHOSPHINIC ACIDS AND THIAZOLIDINYL PHOSPHONIC AND PHOSPHINIC ACID ESTER INTERMEDIATES

Karlheinz Drauz, Freigericht; Hans G. Koban; Jürgen Martens, both of Alzenau, and Werner Schwarze, Frankfurt, all of Fed. Rep. of Germany, assignors to Degussa Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

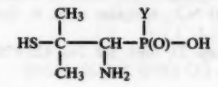
Filed Nov. 16, 1983, Ser. No. 552,103

Claims priority, application Fed. Rep. of Germany, Dec. 11, 1982, 3245887

Int. Cl.³ C07F *9/30, 9/38, 9/65*

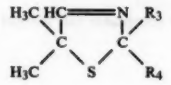
U.S. Cl. 548—111 **18 Claims**

1. A process for the production of 1-amino-2-mercapto-2-methylpropyl phosphonic acid or a 1-amino-2-mercapto-2-methylpropyl alkylphosphinic acid of the formula



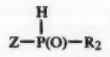
I

where Y is a hydroxy group or is R_1, where R_1 is an alkyl group from a thiazoline-(3) compound and a phosphorus compound comprising reacting a thiazoline-(3) of the formula



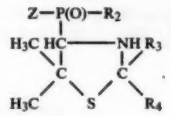
II

where R_3 and R_4 are each hydrogen, an alkyl group or are joined together with the adjacent carbon atom of the thiazoline-(3) ring to form a closed ring with an ester of the formula



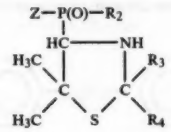
III

where R_2 is an alkoxy group and Z is R_1 or R_2 and hydrolytically splitting the ester formed of the formula



IV

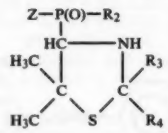
10. An ester of a thiazolidinyl phosphonic acid or a thiazolidinyl alkylphosphinic acid of the formula



IV

where Z is R_1 and R_1 is alkyl and R_2 is alkoxy and R_3 and R_4 are hydrogen, alkyl of 1 to 12 carbon atoms or are joined together with the adjacent carbon atom of the thiazoline-(3) ring to form a closed ring.

11. A ester of a thiazolidinyl phosphonic acid or a thiazolidinyl alkylphosphinic acid of the formula:



where Z is R_1 or R_2 and R_1 is alkyl and R_2 is alkoxy and R_3 and R_4 are joined together with the adjacent carbon atoms of the thiazoline-(3) ring to form a closed ring.

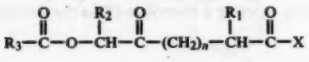
4,524,212

ACYLOXYKETONE SUBSTITUTED IMINO AND AMINO ACIDS

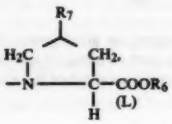
Eric M. Gordon, Pennington, and Jollie D. Godfrey, Jr., Lawrenceville, both of N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

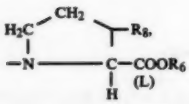
Filed Sep. 27, 1982, Ser. No. 423,875
Int. Cl.³ C07D 207/20, 207/09
U.S. Cl. 548—533 10 Claims

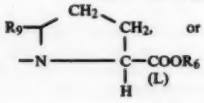
1. A compound of the formula

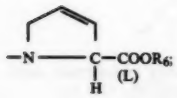


or a pharmaceutically acceptable salt thereof wherein:
X is

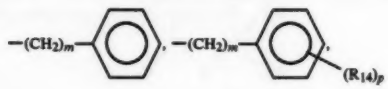




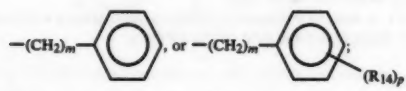




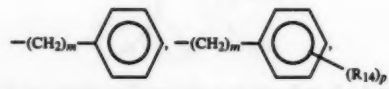
n is one or two;
R_1 is hydrogen, lower alkyl, halo substituted lower alkyl,



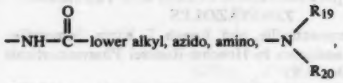
or $-(CH_2)_m$-cycloalkyl;
R_2 is lower alkyl,

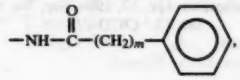


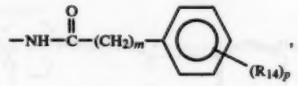
R_3 is lower alkyl,

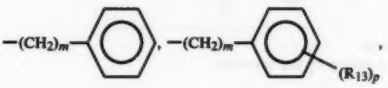


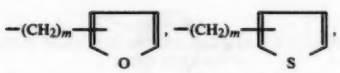
halo substituted lower alkyl, or $-(CH_2)_m$-cycloalkyl;
R_7 is hydrogen, lower alkyl, halogen, keto, hydroxy,

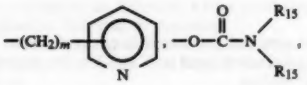




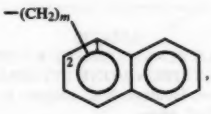




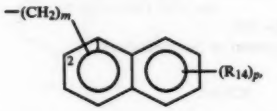




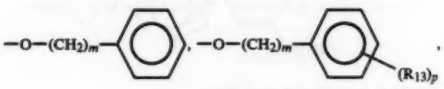
a 1- or 2-naphthyl of the formula



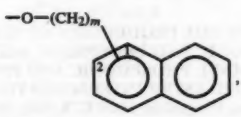
a substituted 1- or 2-naphthyl of the formula



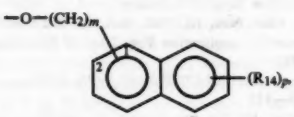
$-(CH_2)_m$—cycloalkyl, —O—lower alkyl,



a 1- or 2-naphthyloxy of the formula



a substituted 1- or 2-naphthyloxy of the formula



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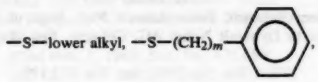
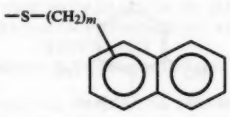
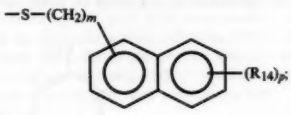


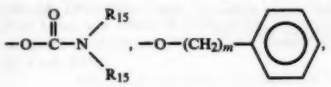
a 1- or 2-naphthylthio of the formula

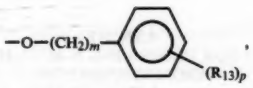


or a 1- or 2-substituted naphthylthio of the formula

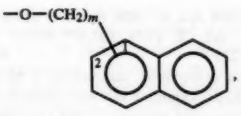


R_8 is keto, halogen,

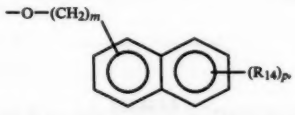


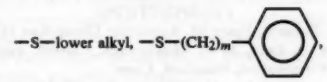


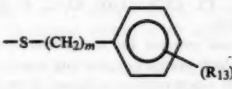
—O—lower alkyl, a 1- or 2-naphthyloxy of the formula



a substituted 1- or 2-naphthyloxy of the formula

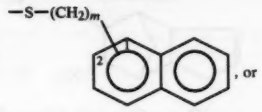




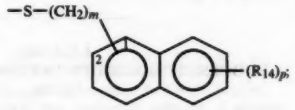


a 1- or 2-naphthylthio of the formula

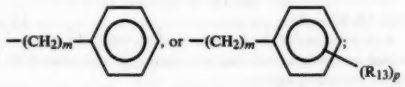
-continued



a substituted 1- or 2- naphthylthio of the formula



R_9 is keto,



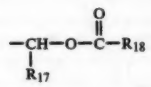
R_{13} is lower alkyl or 1 to 4 carbons, lower alkoxy of 1 to 4 carbons, lower alkylthio of 1 to 4 carbons, chloro, bromo, fluoro, trifluoromethyl, hydroxy, phenyl, phenoxy, phenylthio, or phenylmethyl.

R_{14} is lower alkyl of 1 to 4 carbons, lower alkoxy of 1 to 4 carbons, lower alkylthio of 1 to 4 carbons, chloro, bromo fluoro, trifluoromethyl or hydroxy;

m is zero, one, two, three, or four;

p is one, two or three provided that p is more than one only if R_{13} or R_{14} is methyl, methoxy, chloro, or fluoro;

R_6 is hydrogen, lower alkyl, benzyl, benzhydryl, or



wherein R_{17} is hydrogen, lower alkyl, cycloalkyl or phenyl, and R_{18} is hydrogen, lower alkyl, lower alkoxy, phenyl, or R_{17} and R_{18} taken together are —$(CH_2)_2$—, —$(CH_2)_3$—, —CH=CH—, or

R_{15} is hydrogen or lower alkyl of 1 to 4 carbons;

R_{19} is lower alkyl, benzyl, or phenethyl; and

R_{20} is hydrogen, lower alkyl, benzyl, or phenethyl.

4,524,213

DICYCLOPENTADIENE DICARBOXYLIC ACID DERIVATIVES AND PROCESS FOR THEIR PREPARATION

Hideo Suzuki; Kanji Ohtsuka, and Masami Adachi, all of Funabashi, Japan, assignors to Nissan Chemical Industries Ltd., Tokyo, Japan

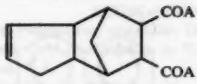
Filed Feb. 8, 1984, Ser. No. 578,103

Claims priority, application Japan, Nov. 9, 1983, 58-210601; Nov. 9, 1983, 58-210602; Nov. 9, 1983, 58-210603

Int. Cl.³ C07C *61/29*; C07D *307/93*

U.S. Cl. 549—235 **4 Claims**

1. A compound represented by the general formula:



(I)

where each A is —OH or —OR where R is an alkyl group, an alkenyl group or a cycloalkyl group, or both A together represent a >O group.

4,524,214

PROCESS FOR FORMING ESTERS OF GLYOXYLIC ACIDS

Mervin E. Brokke, Stamford, and Walter L. Magee, Jr., Danbury, both of Conn., assignors to Stauffer Chemical Company, Dobbs Ferry, N.Y.

Filed Nov. 3, 1983, Ser. No. 548,375
Int. Cl.³ C07C *69/76*
U.S. Cl. 560—51 **12 Claims**

1. A process for the formation of an ester of a glyoxylic acid which comprises oxidizing an organoglycolic ester with hypohalite oxidizing agent.

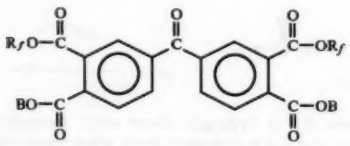
4,524,215

FLUORINATED ESTERS OF 3,3,4,4-BENZOPHENONE TETRACARBOXYLIC DIANHYDRIDE

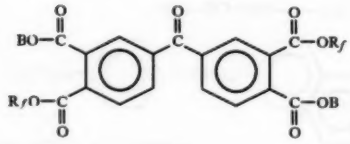
David J. Long, Stanhope, and Bryce C. Oxenrider, Florham Park, both of N.J., assignors to Allied Corporation, Morris County, Morris Township, N.J.

Filed Jun. 3, 1983, Ser. No. 500,727
Int. Cl.³ C07C *69/76*
U.S. Cl. 560—052 **3 Claims**

1. A compound having the structure

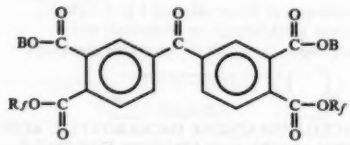


I



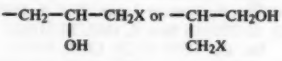
II

or



III

wherein R_f is AR' with A being alkylene of 2–6 carbons and R' being $CF_3(CF_2)_p$ where p is an integer of 3–15; wherein B is a moiety having the structure



with X being Cl, H, or Br.

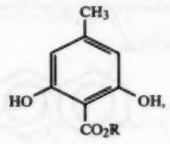
4,524,216

METHOD OF PREPARING P-ORSELLINIC ACID ESTERS

Hans-Georg Schmidt, Niederkassel, Fed. Rep. of Germany, assignor to Dynamit Nobel AG, Cologne, Fed. Rep. of Germany

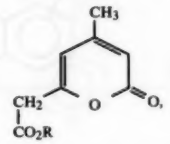
Filed Sep. 14, 1983, Ser. No. 532,199
Claims priority, application Fed. Rep. of Germany, Sep. 22, 1982, 3235019
Int. Cl.³ C07C *69/88*
U.S. Cl. 560—70 **14 Claims**

1. Method of preparing resorcinols of the formula



I

wherein R represents alkyl groups of 1 to 6 carbon atoms, by the action of strong bases on pyrones of the formula



II

wherein R has the above meaning, characterized in that the base is used in catalytic amounts.

4,524,217

PROCESS FOR PRODUCING N-ACYL-HYDROXY AROMATIC AMINES

Kenneth G. Davenport, and Charles B. Hilton, both of Corpus Christi, Tex., assignors to Celanese Corporation, New York, N.Y.

Filed Jun. 8, 1984, Ser. No. 618,659
Int. Cl.³ C07C *103/12, 103/22*
U.S. Cl. 564—223 **6 Claims**

1. A process comprising contacting a hydroxy aromatic ketone with a hydroxylamine salt and a base to form the ketoxime of said ketone, and contacting said ketoxime with a Beckmann rearrangement catalyst to form an N-acyl-hydroxy aromatic amine.

4,524,218

PROCESSES FOR THE PREPARATION OF SQUARAINE COMPOSITIONS

Giuseppa Baranyi; Peter M. Kazmaier; Cheng-Kuo Hsiao, and Richard A. Burt, all of Mississauga, Canada, assignors to Xerox Corporation, Stamford, Conn.

Filed Jan. 11, 1984, Ser. No. 570,563
Int. Cl.³ C07C *85/00, 85/02, 85/06*
U.S. Cl. 564—307 **26 Claims**

1. An improved process for the preparation of squaraine compositions which comprises reacting squaric acid, an aromatic amine, and a composition selected from the group consisting of phenols and phenol squaraines, in the presence of an aliphatic alcohol, and an optional azeotropic substance.

4,524,219

PROCESS FOR SQUARAINE COMPOSITIONS FROM HALF ESTERS OF SQUARIC ACID

Kock-Yee Law, Fairport, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Feb. 3, 1984, Ser. No. 576,656
Int. Cl.³ C07C *85/00, 85/02, 85/06*
U.S. Cl. 564—307 **18 Claims**

1. An improved process for the preparation of squaraine compositions which comprises reacting an alkyl squarate, with an aniline, in the presence of an aliphatic alcohol and an optional acid catalyst.

4,524,220

PROCESS FOR THE PREPARATION OF SQUARAINE COMPOSITIONS IN PRESENCE OF AMINE COMPONENT

Kock-Yee Law, Fairport, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Mar. 12, 1984, Ser. No. 588,840
Int. Cl.³ C07C *85/00, 85/02, 85/06*
U.S. Cl. 564—307 **9 Claims**

1. A process for the preparation of squaraine compositions which comprises the reaction of squaric acid with an aromatic aniline in the presence of an aliphatic amine, wherein there results a product of reduced dark decay properties and increased charge acceptance values as compared to squaraine compositions prepared from the squaric acid process in the absence of an aliphatic amine.

4,524,221

PROCESS FOR THE PRODUCTION OF ACYLOINS

Steven M. Heilmann, North St. Paul; Larry R. Krepski, White Bear Lake, and Jerald K. Rasmussen, Stillwater, all of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

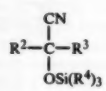
Filed Feb. 22, 1983, Ser. No. 468,719
Int. Cl.³ C07C *49/00, 49/17*
U.S. Cl. 568—322 **10 Claims**

1. A process for preparing an acyloin comprising the steps of:

(A) reacting a Grignard reagent represented by the formula

$$R^1MgX$$

wherein R^1 is an alkyl radical containing 1 to 20 carbon atoms, an aralkyl radical containing 7 to 12 carbon atoms, or an aryl radical containing 6 to 14 carbon atoms, said radicals being unsubstituted or substituted with one or more hetero atoms selected from chloro, fluoro, tertiary amino nitrogen, and ether oxygen, and X is chloro, bromo or iodo, with a silylated cyanohydrin represented by the formula

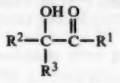


wherein R^2 and R^3 are independently hydrogen, an alkyl radical containing 1 to 20 carbon atoms, an aralkyl radical containing 7 to 12 carbon atoms, or an aryl radical containing 6 to 14 carbon atoms, said radicals being unsubstituted or substituted with one or more hetero atoms selected from halogen, tertiary amino nitrogen, and ether oxygen, and

R^4 is an alkyl radical containing 1 to 6 carbon atoms, an aralkyl radical containing 7 to 12 carbon atoms, or an aryl radical containing 6 to 14 carbon atoms, in an anhydrous, organic solvent,

(B) treating the reaction product of step (A) with aqueous acid, whereby an aqueous acidic layer and an organic layer form, and

(C) recovering the resulting acyloin product from the aqueous acidic layer, said acyloin product being represented by the formula



wherein R^1, R^2, and R^3 are as defined above.

4,524,222

ALKYLATED PHENOL PURIFICATION

Charles F. Weidig, Baton Rouge, La., assignor to Ethyl Corporation, Richmond, Va.

Filed Jan. 26, 1984, Ser. No. 574,134
Int. Cl.³ C07C *29/74*
U.S. Cl. 568—711 **14 Claims**

1. In a process for the production of a tar free dinitro-o-sec-alkylphenol, said process comprising reacting an impure o-sec-alkylphenol with concentrated sulfuric acid to produce a sulfonated o-sec-alkylphenol and then reacting the sulfonated o-sec-alkylphenol with nitric acid, the improvement comprising contacting said o-sec-alkylphenol with a molecular sieve material to purify said o-sec-alkylphenol.

4,524,223

RESOLUTION OF ALCOHOLS USING AMINO ACIDS

David W. House, Arlington Heights, Ill., assignor to UOP Inc., Des Plaines, Ill.

Filed Jan. 19, 1984, Ser. No. 572,038
Int. Cl.³ C07C *29/92, 67/48*
U.S. Cl. 568—715 **22 Claims**

1. A method of obtaining a purified diastereomer from which an optically active alcohol may be readily regenerated comprising contacting a solution containing the diastereomeric esters of an optically active amino acid selected from the group consisting of naturally occurring amino acids, phenylglycine, 4-hydroxyphenylglycine, meta-tyrosine, 3,4-dihydroxyalanine, and 3,5-diiodothyronine, and a racemic alcohol selected from the group consisting of benzylic alcohols whose formula is

where

Ar is a monovalent radical whose parent is selected from the group consisting of benzene, naphthalene, anthracene, phenanthrene, and chrysene, and

R is an alkyl, alkenyl, alkynyl, haloalkyl, or cycloalkyl moiety,

other secondary alcohols whose formula is

where

R is an alkyl or cycloalkyl moiety,

R′ is an alkyl, alkenyl, alkynyl, haloalkyl, or cycloalkyl moiety,

R′ is different from R, and

R′ is sterically bulkier than R,

and bicyclo [2.2.1] heptyl or bicyclo [2.2.2] octyl alcohols, with a chromatographic support, eluting said support with a solvent under chromatographic conditions, and collecting at least one effluent fraction containing a purified diastereomer of said ester.

4,524,224

HYDROLYSIS OF ALKYLENE CARBONATES TO AKLYLENE GLYCOLS

Glenn A. Taylor, Ridgewood, N.J., and Philip F. Wolf, Pleasantville, N.Y., assignors to Union Carbide Corporation, Danbury, Conn.

Continuation of Ser. No. 100,223, Dec. 4, 1979, abandoned, which is a continuation of Ser. No. 863,351, Dec. 22, 1977, abandoned. This application May 20, 1983, Ser. No. 495,462

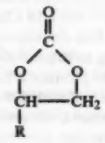
Int. Cl.³ C07C *29/12, 31/12*

U.S. Cl. 568—858 17 Claims

1. The process of making glycols of the formula

$$HOCHRCH_2OH$$

which comprises hydrolyzing in a homogeneous liquid phase mixture, an alkylene carbonate of the formula



in which R is either hydrogen or methyl with an amount of water which is in excess of stoichiometry according to the equation

$$\text{OCHRCH}_2\text{OC} = \text{O} + \text{H}_2\text{O} \xrightarrow{\text{Cat.}} \text{HOCHRCH}_2\text{OH} + \text{CO}_2$$

employing a catalytic amount of potassium carbonate, and maintaining the mixture under a CO_2 pressure of at least 80 psig at a temperature of between about 85° C. and 500° C.

4,524,225

ACID RESISTANT CATALYST SUPPORTS; REDUCTION OF FATTY ACIDS TO FATTY ALCOHOLS

Gail M. Qualeatti, Palatine; Bruce I. Rosen, Skokie; Blaise J. Arena, and Dalia Germanas, both of Des Plaines, all of Ill., assignors to UOP Inc., Des Plaines, Ill.

Filed Dec. 14, 1983, Ser. No. 561,491

Int. Cl.³ C07C *27/04*

U.S. Cl. 568—885 8 Claims

1. A method of hydrogenating a fatty acid containing from about 6 to about 24 carbon atoms, or an ester thereof containing more than about 2% free fatty acids, to a fatty alcohol comprising contacting said acid or ester with hydrogen at a temperature from about 100° to about 300° C. and a pressure from about 100 to about 3000 psig in the presence of a zerovalent metal selected from the group consisting of copper, chromium, ruthenium, platinum, palladium, rhenium and combinations thereof dispersed on a support of alpha-alumina, theta-alumina, titanated alumina, titania, or aluminum phosphate, or combinations thereof, and recovering the fatty alcohol produced thereby.

4,524,226

PREPARATION OF NITRO COMPOUNDS BY VAPOR PHASE NITRATION OF ALDEHYDES

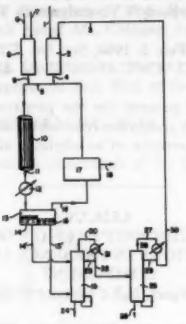
Shu-Chieh P. Wang, Columbia, and Martin B. Sherwin, Potomac, both of Md., assignors to W. R. Grace & Co., New York, N.Y.

Continuation-in-part of Ser. No. 510,860, Jul. 5, 1983, abandoned. This application Dec. 19, 1983, Ser. No. 563,209

Int. Cl.³ C07C *79/02*

U.S. Cl. 562—948 18 Claims

1. A process for selectively forming nitroalkanes comprising contacting in a reaction zone in a homogeneous gas phase and at an elevated pressure of from about 5 to about 20 bars, a temperature of from about 100° C. to about 500° C. and a time



of from about 0.5 to 20 seconds at least one C_2–C_{10} aliphatic aldehyde with nitrogen dioxide and recovering the formed nitroalkane compound.

4,524,227

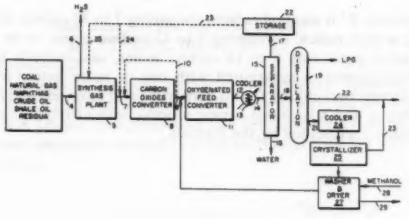
COPRODUCTION OF DURENE AND GASOLINE FROM SYNTHESIS GAS AND ALCOHOLS AND SEPARATION OF DURENE-GASOLINE MIXTURES

Patrick E. Fowles, Doylestown, and Tsoung-Yuan Yan, Philadelphia, both of Pa., assignors to Mobil Oil Corporation, New York, N.Y.

Continuation of Ser. No. 536,572, Sep. 29, 1983, abandoned, which is a continuation of Ser. No. 409,818, Aug. 20, 1982, abandoned. This application Oct. 1, 1984, Ser. No. 656,007

Int. Cl.³ C07C *1/04*

U.S. Cl. 585—408 9 Claims



1. A method for separating durene from a gasoline-durene mixture derived from the conversion of synthesis gas or alcohols or ethers by contact with a crystalline zeolite comprising:

(a) distilling said mixture to produce a lower boiling gasoline fraction boiling below about 150° C to about 165° C. and a higher boiling fraction boiling above about 150° C. to about 165° C.;

(b) cooling said higher boiling fraction to a temperature between about 30° C. and about 0° C. to crystallize durene therefrom,

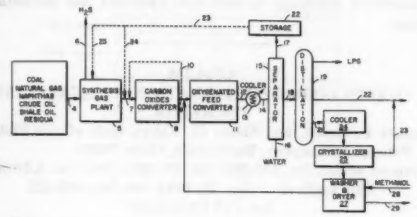
(c) separating the crystals formed from the mother liquor; and

(d) combining the separated mother liquor of with the gasoline fraction of.

4,524,228
PRODUCTION OF DURENE AND GASOLINE FROM SYNTHESIS GAS

Patrick E. Fowles, Doylestown, and Tsoung-Yuan Yan, Philadelphia, both of Pa., assignors to Mobil Oil Corporation, New York, N.Y.

Continuation of Ser. No. 536,576, Sep. 29, 1983, abandoned, which is a continuation of Ser. No. 409,817, Aug. 20, 1982, abandoned. This application Oct. 1, 1984, Ser. No. 656,009
Int. Cl.³ C07C *1/04*
U.S. Cl. 585—408 **22 Claims**



1. A method for producing durene from syngas comprising:
(a) catalytically converting said synthesis gas in a reaction zone containing a crystalline zeolite catalyst to a product stream comprising durene and liquid hydrocarbons boiling in the gasoline boiling range;
(b) fractionating the product stream of (a) to provide at least one lower boiling point fraction boiling below about 150° C. to about 165° C. and a higher boiling point fraction boiling above about 150° C. to about 165° C.;
(c) cooling said higher boiling point fraction to a temperature between about 30° C. and about 0° C. at which durene begins to crystallize from said fraction;
(d) crystallizing durene from said high boiling point fraction;
(e) separating crystallized durene from said fraction leaving behind a mother liquor; and
(f) returning said mother liquor to the lower boiling point fraction of (b).

4,524,229
ARENE ALKYLATION WITH METAL OXIDE-NIOBIUM HALIDE/OXIDE CATALYSTS

Thomas H. Johnson, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Continuation of Ser. No. 587,744, Mar. 9, 1984, abandoned. This application Jan. 16, 1985, Ser. No. 691,731
Int. Cl.³ C07C *2/70*
U.S. Cl. 585—463 **32 Claims**

1. A process for alkylating benzene and substituted benzenes with an olefin having the general formula $R'CH_2{=}CH_2R''$, where R' and R'' are individually hydrogen or alkyl or when taken together form an alkylene group, which process comprises contacting said benzene or substituted benzene with said olefin at a temperature ranging from about 0° C. to about 450° C. with a catalyst prepared by a process which comprises subliming niobium to form a vapor and reacting in a substantially anhydrous and oxygen-free atmosphere the vapor therefrom with a substantially anhydrous, hydroxyl-containing metal oxide substrate.

4,524,230
PREPARATION OF ALKYLAROMATIC COMPOUNDS

Vladimir Haensel, Hinsdale, Ill., assignor to UOP Inc., Des Plaines, Ill.

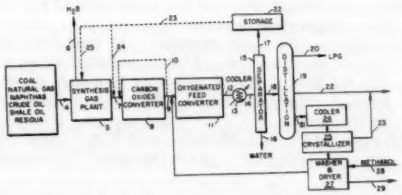
Filed Jun. 8, 1984, Ser. No. 618,852
Int. Cl.³ C07C *3/52*
U.S. Cl. 585—467 **14 Claims**

1. A process for the alkylation of an aromatic scavenger compound with a paraffinic hydrocarbon to produce a resultant alkylaromatic compound by means of attachment of a fragment of said paraffinic hydrocarbon to said aromatic compound which comprises decomposing said paraffinic hydrocarbon on the surface of a nonacid-acting catalyst containing at least one metal of Group VIII of the Periodic Table at a temperature of about 50° to about 400° C. and a pressure in the range of from about subatmospheric to about 50 atmospheres to produce fragments of said paraffinic hydrocarbon and contacting said nonacid-acting catalyst having said fragment of said decomposed paraffin thereon with said aromatic scavenger compound as a scavenging agent to scavenge said fragments of said paraffinic hydrocarbon to attach said fragment of said paraffinic hydrocarbon to said aromatic compound to form said alkylaromatic compound, and recovering said alkylaromatic compound.

4,524,231
PRODUCTION OF DURENE FROM ALCOHOLS AND ETHERS

Patrick E. Fowles, Doylestown, and Tsoung-Yuan Yan, Philadelphia, both of Pa., assignors to Mobil Oil Corporation, New York, N.Y.

Continuation of Ser. No. 536,575, Sep. 29, 1983, abandoned, which is a continuation of Ser. No. 410,156, Aug. 20, 1982, abandoned. This application Oct. 1, 1984, Ser. No. 656,010
Int. Cl.³ C07C *1/04*
U.S. Cl. 585—469 **16 Claims**



1. A method for producing durene from a feed mixture comprising C_1–C_3 alcohols or ethers or mixtures thereof comprising:
(a) catalytically converting said feed mixure to a product stream comprising durene and liquid hydrocarbons boiling in the gasoline boiling range by contacting said feed mixture with a crystalline zeolite in a reaction zone;
(b) fractionating the stream of (a) to provide at least one lower boiling point fraction boiling below about 150° C. to about 165° C. and a higher point fraction boiling above about 150° C. to about 165° C.;
(c) cooling said higher boiling point fraction to a temperature between about 30° C. and about 0° C.;
(d) crystallizing durene from said cooled fraction of (c);
(e) separating crystallized durene from said fraction leaving behind a mother liquor; and
(f) returning said mother liquor to the lower boiling point fraction of (b).

4,524,232
PROCESS FOR PRODUCING HIGH VISCOSITY INDEX LUBES

Arthur W. Chester, Cherry Hill; William E. Garwood, Haddonfield; Stanley J. Lucki, Runnemede, and Samuel A. Tabak, Wenonah, all of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Jan. 4, 1984, Ser. No. 568,015
Int. Cl.³ C07C *2/02*
U.S. Cl. 585—517 **4 Claims**

1. A process for synthesizing lubricating oils from C_2–C_{16} olefins comprising passing an olefinic feedstock containing same in a first stage over a ZSM-23 catalyst or its hydrogen

form under suitable conditions of time, temperature and pressure to form a liquid product boiling below the lube oil range and thereafter in a second stage passing the liquid effluent from said first stage over a ZSM-5 type catalyst having a pore size greater than about 5 angstroms or hydrogen form thereof under the same or other suitable conditions of time, temperature and pressure to further increase the carbon content of said liquid effluent and separating lubricant oil product from the second stage reaction zone.

4,524,233

PROCESS FOR THE PRODUCTION OF DIENES FROM ALDEHYDES

Wen-Liang Hsu, Akron; Neil A. Maly, Tallmadge; Barry A. Matrana; Robert W. Strozier, both of Akron, and Lawson G. Wideman, Tallmadge, all of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Sep. 10, 1984, Ser. No. 649,236
Int. Cl.³ C07C *1/20, 1/253*
U.S. Cl. 585—606 **11 Claims**

1. A process for the conversion of 2-methylbutanal (2MBA) to isoprene which comprises contacting 2MBA in the vapor phase at a temperature of from 200° to 400° C. with a boron (B) phosphate (P) catalyst, the improvement characterized in that (1) the boron phosphate catalyst is prepared by
   (a) combining phosphoric acid and boric acid and/or trialkylborate, wherein the alkyl group is from 1 to 6 carbon atoms;
   (b) at such molar ratios that the molar ratio of P/B is less than 1.0 but more than 0.6;
   (c) contacting the boron phosphate with from 0 to 10 mole percent based on moles of boron, ammonia or an amine, selected from the group consisting of mono-, di- and/or tri-alkyl amines wherein the alkyl group is from 1 to 10 carbon atoms;
   (d) admixing the boron phosphate with from 0.1 to 10 weight percent graphite based on total weight of the boron phosphate;
   (e) calcining the boron phosphate in air at a temperature of from 250° to 650° C. for 1 to 6 hours;
   (f) steaming the calcined boron phosphate at 200° to 300° C. for ½ to 10 hours;
(2) the 2MBA feed is diluted with from 0 to 80 weight percent from a solvent selected from the group consisting of pentane, hexane, heptane, octane and nonane; and
(3) the 2MBA is charged to the reactor at an LHSV of from 1.0 to 20.

4,524,234

PRODUCTION OF HYDROCARBONS WITH ALUMINOPHOSPHATE MOLECULAR SIEVES

Steven W. Kaiser, South Charleston, W. Va., assignor to Union Carbide Corporation, Danbury, Conn.

Filed Oct. 19, 1984, Ser. No. 663,080
Int. Cl.³ C07C *1/00*
U.S. Cl. 585—638 **32 Claims**

1. The process of producing hydrocarbons comprising contacting a feedstock comprising an organic compound of the formula R—X, where R is an organic moiety and X is a moiety containing at least one of halogen, oxygen, sulfur and nitrogen, at conversion conditions with an aluminophosphate molecular sieve having a framework structure whose chemical composition expressed in terms of mole ratios of oxides is

$$Al_2O_3:1.0\pm0.2\ P_2O_5$$

each of said framework structures being microporous in which the pores are uniform and have nominal diameters within the range of about 3 to about 10 Angstroms, an intracrystalline adsorption capacity for water at 4.6 torr and 24° C. of at least 3.5 weight percent, the adsorption and desorption of water being completely reversible while retaining the same essential framework topology in both the hydrated and dehydrated states.

4,524,235

OLEFIN DISPROPORTIONATION AND CATALYST THEREFOR

Robert L. Banks, and Simon G. Kukes, both of c/o Phillips Petroleum Company, Bartlesville, Okla. 74004

Division of Ser. No. 518,558, Jul. 29, 1983, Pat. No. 4,490,478. This application Sep. 10, 1984, Ser. No. 649,035
Int. Cl.³ C07C *6/00*
U.S. Cl. 585—646 **12 Claims**

1. A process for the disproportionation of olefins comprising contacting an olefin feed under suitable reaction conditions with a catalytic amount of a catalyst composition produced by contacting a refractory oxide containing a metal oxide selected from the group consisting of tungsten oxide and molybdenum oxide with a promoting amount of at least one elemental metal selected from the group consisting of zinc and manganese under conditions suitable for said metal to promote the activity of said metal oxide.

4,524,236

PROCESS FOR OXYDEHYDROGENATION OF ETHANE TO ETHYLENE

James H. McCain, Charleston, W. Va., assignor to Union Carbide Corporation, Danbury, Conn.

Filed Jun. 28, 1984, Ser. No. 625,777
Int. Cl.³ C07C *5/38, 5/48*
U.S. Cl. 585—658 **4 Claims**

1. In a low temperature process for converting ethane to ethylene by catalytically oxydehydrogenating ethane exothermically at a temperature of from about 150° C. to about 450° C. in the gas phase, the improvement comprises using a calcined catalyst containing

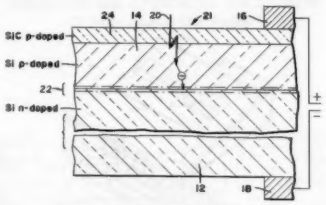
$$Mo_aV_bNb_cSb_dX_e$$

in the form of oxides
wherein:
X=at least one of the following: Li, Sc, Na, Be, Mg, Ca, Sr, Ba, Ti, Zr, Hf, Y, Ta, Cr, Fe, Co, Ni, Ce, La, Zn, Cd, Hg, Al, Tl, Pb, As, Bi, Te, U, and W; and
a=0.5 to 0.9
b=0.1 to 0.4
c=0.001 to 0.2
d=0.001 to 0.1
e=0.001 to 1.0.

4,524,237
INCREASED VOLTAGE PHOTOVOLTAIC CELL

Bernd Ross, deceased, late of San Diego, Calif.; Donald B. Bickler, Temple City, Calif., and Brian D. Gallagher, Costa Mesa, Calif., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Feb. 8, 1984, Ser. No. 578,390
Int. Cl.³ H01L 31/06
U.S. Cl. 136—261 2 Claims

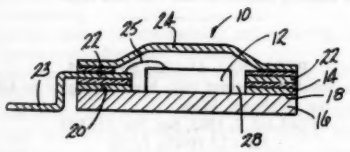


1. A photovoltaic cell comprising:
a substrate of crystalline silicon;
a first layer of crystalline silicon disposed on said substrate; and
a second layer disposed on said first layer;
said substrate and said first layer having opposite types of doping, one being p-doped and the other being n-doped;
said second layer comprising crystalline silicon carbide.

4,524,238
SEMICONDUCTOR PACKAGES

Sheldon H. Butt, Godfrey, Ill., assignor to Olin Corporation, New Haven, Conn.

Filed Dec. 29, 1982, Ser. No. 454,409
Int. Cl.³ H05K 5/04, 5/06
U.S. Cl. 174—52 FP 32 Claims

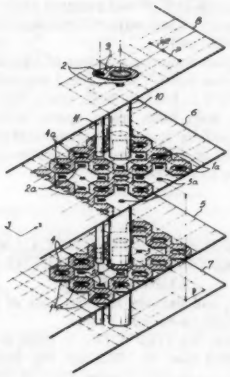


1. A casing adapted to receive an electronic device, comprising:
a first high thermal conductivity metal or metal alloy substrate having a first surface, a first metal or metal alloy cladding having a first thin refractory oxide layer on at least a first surface thereof, said first surface of said substrate being bonded to a second surface of said first metal or metal alloy cladding, said first surface of said substrate adapted to have said electronic device adhered thereto to enhance the transfer of heat generated by said device to the outside of said casing;
a metal or metal alloy leadframe having a second thin refractory oxide layer thereon, said leadframe being bonded to said first refractory oxide layer and insulated from said first metal or metal alloy cladding by said first and second refractory oxide layers, said leadframe further being adapted for electrical connection to the electronic device;
a metal or metal alloy cover having a third thin refractory oxide layer on at least a portion of one surface thereof, said third oxide layer being bonded to said second refractory oxide layer whereby said electronic device is sealed between said substrate and said cover.

4,524,239
MULTI-LAYER ELECTRIC CIRCUIT BOARD AND BLANKS THEREFOR

Francois Rouge, 27, rue Audran, 94400 Vitry sur Seine, France

Filed Aug. 31, 1982, Ser. No. 413,456
Claims priority, application France, Sep. 2, 1981, 81 16718
Int. Cl.³ H05K 1/14
U.S. Cl. 174—68.5 8 Claims

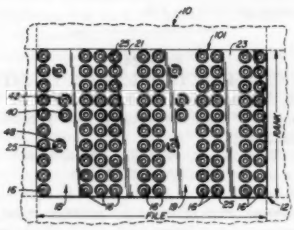


1. A blank for a multi-layer electrical circuit board, comprising an electrically insulating flat substrate having two outer faces and at least one inner layer in said substrate, parallel to said faces and having an electrically conductive network extending throughout the area of said inner layer and formed by the repetition of an elementary predetermined pattern with a predetermined pitch 2p in two orthogonal directions, said predetermined pattern being of such shape that adjacent patterns are in electrical contact and that said inner layer has a first regular grid of predetermined pitch p whose nodes constitute insulated sites and a second grid of pitch p which is off-set by p/2 from the first grid in at least one of said directions, having nodes one at least of which per elementary pattern unit is insulated while the other one belong to the conductive network.

4,524,240
UNIVERSAL CIRCUIT PROTOTYPING BOARD

Rodney D. Stock, San Rafael, and Gary H. Newman, Novato, both of Calif., assignors to Lucasfilm Ltd., San Rafael, Calif.

Filed Aug. 17, 1983, Ser. No. 523,766
Int. Cl.³ H05K 1/02
U.S. Cl. 174—68.5 9 Claims



1. A prototyping board, comprising:
at least one dielectric layer intermediate of first and second electrically conductive layers forming a sandwich having a top side for component insertion and a bottom side for circuit wiring;

said sandwich having, coextensive in each layer, a layout area in which a pattern of socket pin holes on a standard 0.1 inch center is repeated in contiguous substantially 1.0 inch wide ranks and 1.6 inch wide files;

each one of said patterns having 10 equal sized rows in said ranks and 16 equal sized columns in said files, wherein ten of said columns in each one of said patterns defines socket pin holes in every row, and wherein two pairs of adjacent columns in each one of said patterns excludes socket pin holes, said pairs of said adjacent columns being separated by six columns, and

wherein said rows comprise a pattern of repeated columns of said socket pin holes ("hole") and excluded socket pin holes ("space") as follows: hole, space, space, hole, hole, hole, space, hole, hole, space, space, hole, hole, space, hole, hole, thereby to accommodate dual-in-line package (DIP) circuits of various standard widths at various locations relative to said pattern.

4,524,241

INSULATED MULTIWIRE ELECTRIC CABLE HAVING PROTECTED SOLDERABLE AND NON-HEAT-SEALING CONDUCTORS

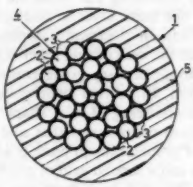
Germaine Binder, and Bernard Kremer, both of Paris, France, assignors to Thomson-Brandt, France

Continuation of Ser. No. 213,074, Dec. 4, 1980, abandoned. This application Nov. 10, 1982, Ser. No. 440,524

Claims priority, application France, Dec. 18, 1979, 79 30938

Int. Cl.³ H01B *1/02, 7/28*

U.S. Cl. 174—119 R **4 Claims**



1. A flexible insulated multiwire electric cable comprising plural uninsulated conductors surrounded by a sheath layer of electrical insulation material, each said uninsulated conductor protected by a layer of lead alloy, non-heat-sealing during formation of the sheath layer at temperatures of 300°-350° C. yet solderable even after accelerated aging, wherein each of said plural uninsulated electric conductors is individually coated with a said layer of lead alloy which has good wetability and excellent solderability and which does not lead to the formation of a nonsolderable brittle intermetallic compound, said layer being constituted by 100% alloy, said alloy consisting essentially of lead within the range 90% to 99% and tin within the range of 10% to 1%.

4,524,242

LOW-COST ELECTRONIC MAIL TERMINAL

Russell Fish, III, Mountain View, and James R. Yurchenco, Palo Alto, both of Calif., assignors to Post Technologies, Inc., Menlo Park, Calif.

Filed Feb. 8, 1983, Ser. No. 465,040

Int. Cl.³ H04L *21/00*

U.S. Cl. 178—4 **10 Claims**

1. An electronic mail terminal for point-to-point communication of messages by utilizing a standard telephone network, said terminal comprising:

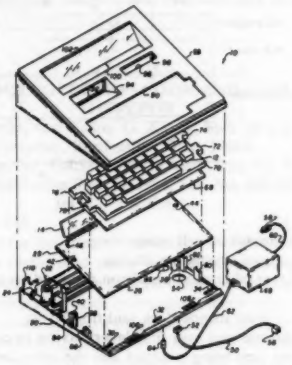
a base housing including circuit board mounting means, printer mounting means, tape drive mounting means, keyboard mounting means, and cover mounting means;

a circuit board mounted to the front portion of said base housing by said circuit board mounting means, said circuit board including communication circuitry for interfacing with said telephone network, and with computer circuitry, and control circuitry;

means for electrically coupling said printed circuit board to said telephone network;

electrical power supply means coupled to said circuit board for converting standard alternating current power to low voltage direct current power for said terminal;

a printer affixed to said base housing with said printer mounting means and electrically coupled to said circuit board, said printer operable for printing messages;



a tape drive affixed to said base housing with said tape drive mounting means and electrically coupled to said circuit board, said tape drive operable for recording messages onto and reading messages from a tape cassette;

display means affixed and electrically coupled to said printed circuit board and mounted to said base housing by said keyboard mounting means, a keyboard operable for inputing messages; and

a cover housing affixed to said base housing.

4,524,243

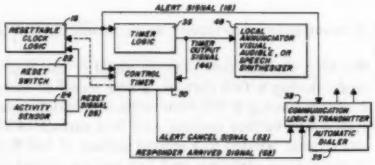
PERSONAL ALARM SYSTEM

L. Dennis Shapiro, Chestnut Hill, Mass., assignor to Lifeline Systems, Inc., Waltham, Mass.

Filed Jul. 7, 1983, Ser. No. 511,921

Int. Cl.³ H04M *11/04*

U.S. Cl. 179—5 R **42 Claims**



1. A subscriber station for transmission of information over a a communications link to a central monitoring station and indicative of subscriber inactivity comprising:

means operative to provide an alert signal at predetermined time intervals;

switch means;

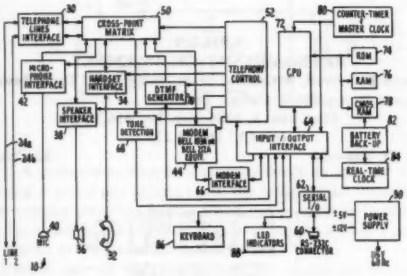
means operative to transmit a first message over said communications link to said central monitoring station in response to said alert signal;

means operative to transmit a second message over said communications link to said central monitoring station within a selected period following the occurence of said alert signal upon activation of said switch means.

4,524,244
DIGITAL AND VOICE TELECOMMUNICATION APPARATUS

Federico Faggin, Los Altos Hills; Jerry A. Klein, Los Altos; Lauren F. Yazolino, Oakland; Robert G. Korody; Eric P. L. Ha, both of Cupertino, all of Calif., and Stephen Kerman, Southbury, Conn., assignors to Cygnet Technologies, Inc., Sunnyvale, Calif.

Filed Aug. 5, 1983, Ser. No. 520,739
Int. Cl.³ H04M *11/00*
U.S. Cl. 179—2 DP 4 Claims
MICROFICHE APPENDIX INCLUDED
(9 Microfiche, 550 Pages)



1. A communication apparatus for transmitting and receiving analog voice signals, digital data signals, and data carrier signals that precede and follow the digital data signals to and from a communication medium, in the same session, said apparatus comprising:

telephony means for transmitting and receiving said voice signals to and from said medium;

modem means for transmitting and receiving said data signals to and from said medium;

switch means interposed between said communication medium, said telephony means, and said modem means; said switch means are adapted to connect said medium and said telephony means and said modem means in a first position and in a second position, wherein in said first position said telephony means are connected to transmit and to receive voice signals to and from said medium and said modem means are connected to receive data carrier signals from said medium; and wherein in said second position said telephony means are disconnected from said medium and said modem means are connected to transmit and to receive digital data signals to and from said medium; and

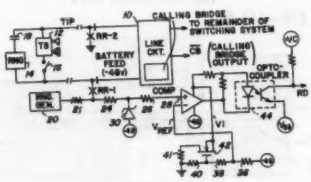
control means for controlling said switch means between said first position and said second position; said control means for automatically switching said switch means from said first position to said second position when said apparatus transmits data signals to said medium or when said modem means detects said data carrier signals; and said control means for automatically switching said switch means from said second position to said first position when said apparatus terminates the transmission of digital data signal to said medium or when said modem means ceases to receive data signals from said medium;

whereby said data signal and voice signal are transmitted and received to and from said communication medium in the same session.

4,524,245
RING TRIP DETECTION SYSTEM

Bruce G. Littlefield, Honeoye Falls, N.Y., assignor to Redcom Laboratories Inc., Fairport, N.Y.

Filed Jan. 13, 1983, Ser. No. 457,556
Int. Cl.³ H04M *3/02*
U.S. Cl. 179—18 HB 18 Claims

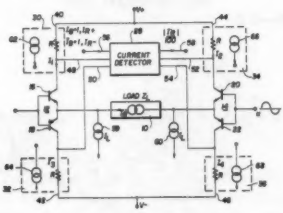


1. A ring trip detection system for detecting a ring trip condition when a telephone set having a ringer to which ringing signals are applied goes off-hook which comprises an up-down counter, means responsive to the duty cycle of said ringing signals with respect to a reference voltage level to condition said counter into an underflow state when said duty cycle does not exceed 50%, and means operative upon absence or occurrence of said underflow state for providing an output indicative of the presence or absence of a ring trip.

4,524,246
SLIC II—COMMON-MODE CURRENT REJECTION

Peter J. Meza, Indian Harbour Beach, Fla., assignor to Harris Corporation, Melbourne, Fla.

Filed Jul. 7, 1982, Ser. No. 396,072
Int. Cl.³ H04M *3/22*
U.S. Cl. 179—18 FA 8 Claims



1. A subscriber line interface circuit for connecting a subscriber's telephone line to a telephone exchange having high common-mode currents, comprising:

two identical amplifiers, each having an output coupled to a respective wire of said telephone line and an input connected to said telephone exchange, said amplifiers connected in parallel to form a bridge circuit;

a directional current detector means coupled to said bridge circuit for detecting loop current in said circuit and for suppressing said common-mode currents as a function of the direction of loop current;

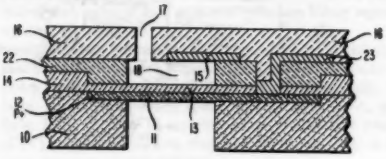
a plurality of auxiliary current detector means within said bridge circuit for sensing loop and common-mode currents; and

a control circuit means connected to said auxiliary current detector means and said directional current detector means for determining the polarity of said loop current and placing said direction current detector means in a proper directional mode for detecting said loop current.

4,524,247
INTEGRATED ELECTROACOUSTIC TRANSDUCER WITH BUILT-IN BIAS

W. Stewart Lindenberger, Somerset; Tommy L. Poteat, Bridgewater, and James E. West, Plainfield, all of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Jul. 7, 1983, Ser. No. 511,637
Int. Cl.[3] H01G 5/16
U.S. Cl. 179—111 R 7 Claims



1. An electroacoustic transducer formed in a semiconductor substrate and comprising:

a diaphragm which vibrates in response to an input signal at audio and ultrasonic frequencies;

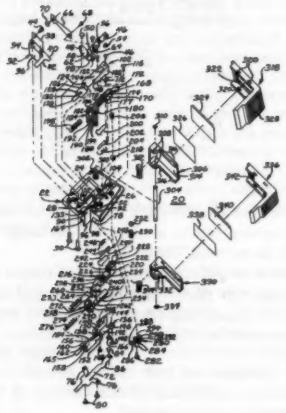
a pair of electrodes placed with respect to said diaphragm so that the electric field between the electrodes varies in relationship with the vibrating diaphragm to permit conversion between electrical and acoustic signals, said electrodes defining a capacitor; and

an insulating layer adjacent to at least one of the electrodes in the area between the electrodes and including a distribution of fixed charge so as to provide a dc bias for the capacitor.

4,524,248
ALTERNATE ACTION HEADLAMP SWITCH WITH MECHANICAL LOGIC

Fred Levko, Evanston, Ill., assignor to Illinois Tool Works Inc., Chicago, Ill.

Filed Oct. 3, 1983, Ser. No. 538,314
Int. Cl.[3] H01H 9/26
U.S. Cl. 200—5 B 16 Claims

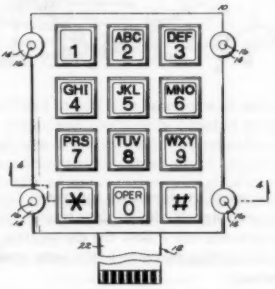


1. An electric switch arrangement comprising a base, first manually operable switch operating means on said base, first switch contact means carried by said base, means interconnecting said first switch operating means and said first switch contact means for closing said first switch contact means in response to a first movement of said first switch operating means and for opening said first switch contact means in response to a second movement of said first switch operating means, second manually operable switch operating means on said base, second switch contact means carried by said base, means interconnecting said second switch operating means and said second switch contact means for closing said second switch contact means in response to a first movement of said second switch operating means and for opening said second contact means in response to a second movement of said second switch operating means, and means interconnecting said first switch operating means and said second switch operating means for effecting movement of both of said first and second switch operating means upon manual movement of said first switch operating means, but effecting movement of only said second switch operating means in response to manual movement of said second switch operating means; said first switch operating means comprising a push on-push off means, and said second switch operating means comprising a push on-push off means.

4,524,249
KEYBOARD SWITCH ASSEMBLY

Charles F. Farrell, Attleboro, Mass., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Jun. 1, 1984, Ser. No. 616,363
Int. Cl.[3] H01H 13/70
U.S. Cl. 200—5A 13 Claims



1. Keyboard apparatus comprising:

(a) a support plate,

(b) a sheet of flexible dielectric material having a top and a bottom surface received on the support plate, the sheet having a pattern of conductive material disposed on the top surface, the pattern having a plurality of sets of first and second spaced interdigitated runs, the sheet provided with an interconnection tail portion extending beyond the support plate, conductive runs disposed on the tail portion of facilitate electrical connection to other electrical means,

(c) a keypad sheet of flexible, soft, electrically insulative material having a top and a bottom surface and a plurality of domed shaped portions formed therein, the dome shaped portions having a top surface and a bottom surface, the sheet disposed on the top surface of the polyester sheet with a dome shaped portion disposed over each respective set of interdigitated runs, stop means formed in the keypad sheet adjacent each dome extending above the top surface of the keypad sheet,

(d) a layer of conductive material disposed on the bottom surface of each dome shaped portion,

(e) an escutcheon received over the sheets and on the support plate, the escutcheon formed with a key receiving aperture for each dome shaped portion and alignable therewith, and

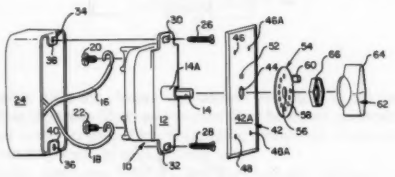
(f) a key received in each aperture and adapted to transfer motion to the top surface of the dome shaped portion

causing the conductive layer to move toward its respective set of interdigitated runs until the conductive layer bridges the spaced runs of its respective set, the stop means adapted to limit downward travel of a respective key.

4,524,250
ADJUSTABLE STOP TIME SWITCH

Lawrence J. Laviana, Kensington, Conn., assignor to M. H. Rhodes, Inc., Avon, Conn.

Filed Dec. 16, 1983, Ser. No. 562,175
Int. Cl.³ H01H 7/00
U.S. Cl. 200—33 R **17 Claims**



1. A presettable time switch comprising an interval timer having a motor and setting shaft, the setting shaft rotatable in one angular direction from a timed-out position and rotatable by the motor in the opposite angular direction during a period of runout to the timed-out position, and

a timed interval limit mechanism, the mechanism including

a face plate attached to the timer and having a time scale indicating dial, an aperture receiving the timer setting shaft, and a stud fixed to protrude from the face plate at a predetermined radial distance from the center of the face plate aperture,

a stop member mounted in overlying relation to the face plate and having an aperture corresponding to the face plate aperture and receiving the timer setting shaft, a plurality of stud receiving openings formed in the stop member, the centers of the stud receiving openings being located on an arc spaced from the center of the stop member aperture at said predetermined radial distance, and a protrusion projecting from the stop member, and

a winding knob mounted on the timer setting shaft in overlying relation to the stop member, the winding knob having an indicating pointer cooperating with the dial for manually setting a desired time cycle, a preselected opening of the stop member receiving the face plate stud and cooperating with the setting shaft received in the stop member aperture for affixing the stop member and its protrusion in a preselected adjusted angular position relative to the face plate, the stop member protrusion located in interfering relation to the winding knob pointer for adjustably limiting timer runout as determined by the preselected adjusted position of the stop member upon the winding knob pointer being moved into engagement with the stop member protrusion.

4,524,251
ELECTRICAL SWITCH

Siegfried Schulz, Hueckeswagen, Fed. Rep. of Germany, assignor to K. A. Schmersal GmbH & Co., Fed. Rep. of Germany

Filed Nov. 18, 1983, Ser. No. 553,039
Claims priority, application Fed. Rep. of Germany, Aug. 20, 1983, 3330109
Int. Cl.³ H01H 13/52, 9/28
U.S. Cl. 200—42 R **12 Claims**

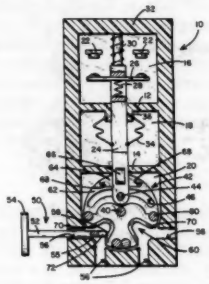
1. A keyed electrical switch comprising:

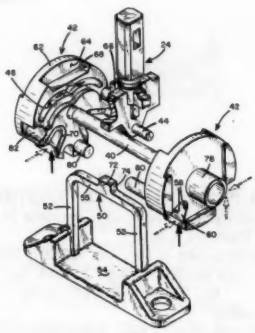
(a) a housing containing a slidably mounted push rod, said push rod including one or more electrical contacts for engagement with one or more electrical contacts mounted along a path of travel of said push rod;

(b) a switch actuating member insertable through a mating opening in said housing;

(c) at least one roller mounted in said housing to rotate upon engagement by said actuating member;

(d) means engageable by said actuating member for displacing said roller along its axis of rotation and including means for limiting the rotation of said roller, unless said roller is axially displaced; and





(e) means coupling said roller to said push rod for actuating said push rod to make or break one or more electrical connections between one or more of said electrical contacts at a predetermined pivot angle of said roller occurring when said roller is axially displaced.

4,524,252
MOTOR-DRIVEN ELECTRIC TIMER

Tetuji Okazaki; Kanji Kawasaki, and Masayoshi Hirose, all of Okayama, Japan, assignors to Omron Tateisi Electronics Co., Kyoto, Japan

Filed Oct. 19, 1982, Ser. No. 435,219
Claims priority, application Japan, Oct. 19, 1981, 56-166977; Oct. 19, 1981, 56-155318[U]; Oct. 21, 1981, 56-168341
Int. Cl.³ H01H 7/00
U.S. Cl. 200—38 E **8 Claims**

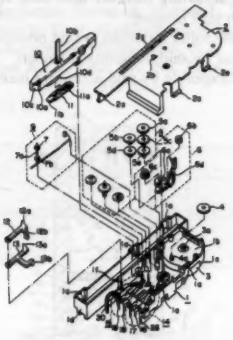
1. A motor-driven electric timer comprising

a slider having a rack in its sliding direction, which is externally actuatable for manually setting the timer to a desired position,

a motor,

a reduction gear assembly for reducing a rotational speed from said motor to a predetermined speed,

a pinion being adapted to be engaged between said reduction gear assembly and said rack of said slider,



a switching lever member following the movement of said slider, and

a contact member actuated by said switching lever member.

4,524,253

THREE POSITION SWITCH CONSTRUCTION

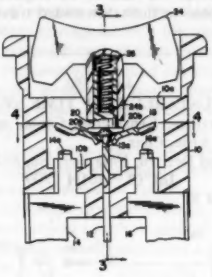
Richard W. Sorenson, Avon, Conn., assignor to Carlingswitch, Inc., West Hartford, Conn.

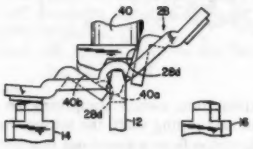
Continuation-in-part of Ser. No. 560,207, Dec. 12, 1983, abandoned. This application Apr. 2, 1984, Ser. No. 596,170

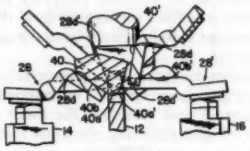
Int. Cl.³ H01H *5/06, 21/42*

U.S. Cl. 200—68.2 **23 Claims**

1. A switch comprising a base of insulating plastic and defining an upwardly open cavity, several fixed contacts spaced along a bottom wall of said cavity, said fixed contacts including a central fixed contact having an upper edge defining a single fulcrum, said switch base having means defining actuator support regions, an actuator including support means cooperating with said support regions to movably support said actuator so that an inner portion moves inside said cavity between opposed limit positions, a movable contact lever having a mid-portion pivotally supported on said fulcrum defining upper edge of said central fixed contact for movement from and to oppositely oriented limit positions such that the opposed free end portions of said movable contact lever are adapted to abut other of said fixed contacts spaced to either side of said one centrally located fixed contact, said central fixed contact consisting of a flat terminal strip mounted in a slot provided in the case bottom wall, said central fixed contact fulcrum defining upper edge portion having a relieved portion, pin means slidably received in said actuator and having a medial protuberance of width significantly less than the width of said lever and movable in a path through a central valley portion of said movable contact and through said relieved portion, spring biasing means acting on said pin means so that said pin means acts on said movable contact lever to urge said lever downwardly at least in limit positions thereof corresponding to said two limit positions of said actuator, said pin means having at least one land for selectively engaging a region of said contact lever located to one side of said central valley portion engaged by said medial protuberance whereby to provide support for said contact lever in at least one position of said contact lever, said at least one land comprising two







separated abutment area provided in laterally spaced relationship to said path of movement for said medial protuberance.

4,524,254

PRESSURE SWITCH

Hatsuyoshi Yoshida; Michio Fukutome, both of Aichi; Makoto Ohuchi, and Jyun Ohta, both of Toyota, all of Japan, assignors to Kabushiki Kaisha Tokai Rika Denki Seisakusho, Oguchi and Toyota Jidosha Kabushiki Kaisha, Toyota, both of, Japan

Filed Nov. 14, 1983, Ser. No. 551,030

Claims priority, application Japan, Nov. 17, 1982, 57-174161[U]

Int. Cl.³ H01H *35/40, 9/02*

U.S. Cl. 200—83 R **3 Claims**

1. A pressure switch, comprising:

a pressure switch body having a switch chamber; a diaphragm housed in said body so as to be displaceable under pressure;

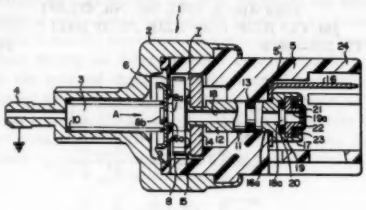
a switch element located in said switch chamber responsive to displacement of the diaphragm, said switch element further including a cylindrical vent member having an enlarged end and further including a first vent hole formed therein for communicating said switch chamber with the surrounding atmosphere;

a contact mounted in said body;

a holder having a second vent hole in communication with

said first vent hole, said holder mounted in said enlarged end of said cylindrical vent member;

a stationary contact mounted on said cylindrical vent member for being contacted by said contact mounted in said body;



a porous filter for closing said second vent hole at one end via said porous filter, said porous filter being air permeable and water repellent and extending outwardly from surrounding walls of said holder; and

a washer positioned between said filter and said enlarged end of said cylindrical vent member such that said filter is spaced outwardly from said washer.

4,524,255

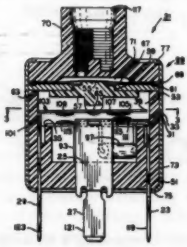
CONTROL DEVICE AND METHOD OF OPERATING SUCH

Donald L. Haag, Sterling, Ill., assignor to General Electric Company, Fort Wayne, Ind.

Division of Ser. No. 349,329, Feb. 16, 1982, Pat. No. 4,446,614. This application Dec. 29, 1983, Ser. No. 566,847

Int. Cl.³ H01H *35/24*

U.S. Cl. 200—83 R **18 Claims**



17. A method of operating a control device including a housing with a chamber therein, a plurality of electrical circuit elements mounted to the housing and each having a contact section disposed at different preselected elevations within the chamber, a switch and terminal combination including a terminal mounted to the housing, and a pair of generally coplanar switch segments disposed within the chamber, one of the switch segments having a pair of opposite sides interposed between a pair of opposite ends with one of the opposite ends being pivotally connected with the terminal and the other of the switch segments being connected with the one switch segment at least generally adjacent the other of the opposite ends thereof and extending generally laterally beyond either opposite side of the one switch segment, and means movable in the housing and defining a part of the chamber for exerting an actuating force on the switch segments, the method comprising the steps of:

moving the exerting means in the housing and transmitting the actuating force to the switch segments;

pivoting the switch segments in their coplanar relation in response to the actuating force transmitted thereto generally conjointly and in the coplanar relation thereof about the pivotal connection of the one opposite end of the one switch segment with the terminal and engaging a part of one of the one and other switch segments in electrical contacting engagement with a contact section of one of the electrical circuit elements; and thereafter

rocking the switch segments from their coplanar relation in response to the actuating force transmitted thereto generally conjointly about the pivotal connection of the one opposite end of the one switch segment with the terminal and also about the electrical contacting engagement of the part of the one of the one and other switch segments with the contact section on the one electrical circuit element and engaging a part of the other of the one and other switch segments with another contact section on another of the electrical circuit elements.

4,524,256

PRESSURE-SENSITIVE ELEMENT

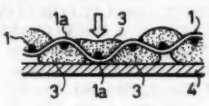
Hiroyasu Miyata, and Kazuhiko Ito, both of Furukawa, Japan, assignors to Alps Electric Co., Ltd., Japan

Filed Aug. 29, 1983, Ser. No. 527,286

Claims priority, application Japan, Aug. 27, 1982, 57-128542[U]

Int. Cl.³ H01H *35/00*

U.S. Cl. 200—86 R **3 Claims**



1. A pressure-sensitive element comprising a conductive process mesh having a plurality of spaced-apart convex conductive parts, an elastic insulator formed integrally with said mesh having a plurality of spaced-apart insulator parts between adjacent convex conductive parts which bulge more than said convex conductive parts without covering said convex conductive parts, and a conductive layer opposed to said conductive porous mesh and elastic insulator; so that when no pressure is applied, said convex conductive parts of said conductive porous mesh are spaced apart from said conductive layer by the bulging of said insulator parts of said elastic insulator, whereby said element is in its nonconductive state, and that when a pressure is applied, the bulging of said insulator parts of said elastic insulator is deformed to bring at least one of said convex conductive parts of said conductive porous mesh into contact with said conductive layer, whereby said element is in its conductive state.

4,524,257

HIGH-VOLTAGE GAS-BLAST PUFFER TYPE CIRCUIT-BREAKER

Ernst Slamecka, Alt-Pichelsdorf 13, D-1000 Berlin 20, Fed. Rep. of Germany

Filed Mar. 8, 1982, Ser. No. 355,517

Claims priority, application Fed. Rep. of Germany, Mar. 30, 1981, 3113325; Jun. 16, 1981, 3124075

Int. Cl.³ H01H *33/88*

U.S. Cl. 200—148 A **6 Claims**

1. A gas-blast puffer-type circuit-breaker comprising:

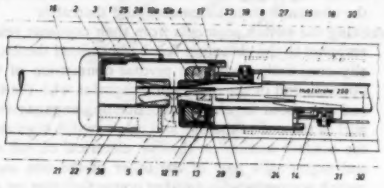
dual-blast nozzle arrangement, wherein two nozzles facing each other in a fixed axial distance;

said dual-blast nozzles, each of them ending in a gas flow absorbing volume, being temporarilly surrounded by a movable single compression cylinder;

separated contact pieces for carrying continuous and arc current respectively;

the improvement of said circuit-breaker characterizing:

dual-blast nozzle arrangement, wherein a first nozzle (5) being made of electrically conducting material whereas a second nozzle (6) being made of electrically insulating material;



a movable compression cylinder (3) of electrically insulating material bearing a contact piece (23) being intended for carrying continuous current;

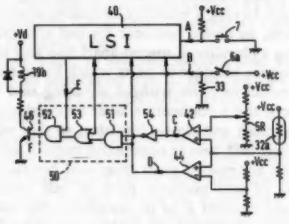
an arcing contact piece (8) being connected mechanically rigid and suitable for carrying electrical currents with said movable contact piece (23).

4,524,258

BACK-UP CONTROL CIRCUIT FOR CONTROLLING A MAGNETRON OF A MICROWAVE OVEN

Masayuki Aoki, Nagoya, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Mar. 8, 1984, Ser. No. 587,648
Claims priority, application Japan, May 27, 1983, 58-93706
Int. Cl.³ H05B *6/68*
U.S. Cl. 219—10.55 B 6 Claims



1. A control circuit for controlling a microwave oven having a mechanical timer providing a time signal and food temperature detecting means for providing a food temperature signal, said control circuit comprising:

a magnetron;

a high voltage transformer electrically connected to said magnetron;

relay switching means, for connecting said transformer with a power source;

output control means, including a large scale integrated circuit responsive to said time signal and said food temperature signal, for producing a control signal to control said relay switching means; and

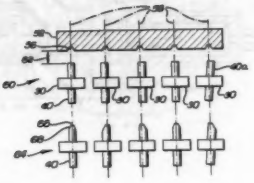
means, provided between said relay switching means and said output control means, for controlling the relay switching means in response to said control signal, said time signal, and said food temperature signal, said time and food temperature signals connected as direct inputs to said controlling means and said controlling means operative for generating a magnetron cut-off signal for operating said relay switching means to disconnect said transformer from said power source for stopping energization of the magnetron when cooking is completed.

4,524,259

PRINT HAMMER ASSEMBLY METHOD

Peter H. Wolf, Thousand Oaks; Thomas A. Dobson, and Rafael Rozo, both of Canoga Park, all of Calif., assignors to Dataproducts Corporation, Woodland Hills, Calif.

Filed Apr. 4, 1983, Ser. No. 481,651
Int. Cl.³ B23P *1/08;* B23K *26/00;* B41J *9/127*
U.S. Cl. 219—69 R 18 Claims



1. A method of manufacturing a matrix printhead comprising the steps of:

providing a plurality of spaced apart elongated flat spring hammer elements;

securing an impact pin to each hammer element, wherein each impact pin has a tip which defines a dot to be printed and a tip configuration which is different from that desired for the printhead;

attaching the hammer elements to a printhead assembly; and

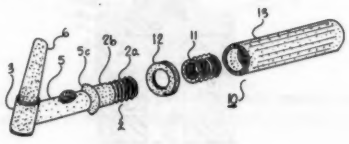
subsequently shaping the impact pins so that they have the desired tip configuration and so that they are accurately spaced with respect to each other.

4,524,260

ADAPTER KIT FOR TUNGSTEN-INERT-GAS TORCHES

James V. Rotilio, 329 Hackensack St., Carlstadt, N.J. 07072

Filed May 19, 1983, Ser. No. 496,073
Int. Cl.³ B23K *9/00*
U.S. Cl. 219—75 4 Claims



1. A welding torch comprising a welding head adapted to perform operations with a conventional electrode rod, and a body portion including means connectable to sources of electrical power and cooling water, said body portion including a shoulder projecting outwardly in a radial direction along the axis, forming an annular outer face normal to said axis; a terminal centered on said face comprising a tubular housing of highly conductive metal for accommodating the input ends of water cooling and electrical cables constructed to service said welding torch, wherein the portion of said tubular housing, commencing at the annular face of said shoulder, is substantially smooth and of slightly larger diameter than a screw-threaded portion at the opposite end of said terminal;

means for adapting said welding torch for operation at an electrical current in excess of about 100 amperes, said means comprising:

an internally and externally-threaded tube of high conductive metal constructed to screw onto the screw-threaded portion of said tubular cable housing in coaxial mating relation;

a gasket of heat and electrical insulating material constructed to be just accommodated on the smooth portion of said tubular cable housing, in flush relation to the annular outer face of said shoulder, and;

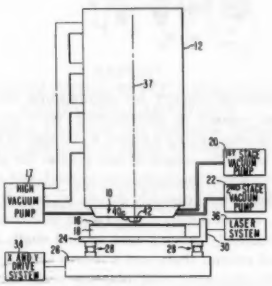
a sleeve of heat and electrical insulating material having substantially the same outer diameter of said gasket and having an internal screw-threaded portion commencing at a plane spaced-apart from its inner end an axial distance approximately exceeding the axial length of the smooth portion of said tubular housing and extending a substantial distance inwardly therefrom, said internal screw-threaded portion having an inner diameter constructed to screw onto the external threads of said internal and external-threaded tube when said tube is screwed in place on said tubular housing, and said sleeve constructed to make at its inner annular end flush with the outer face of said gasket in place against the outer face of said annular sleeve.

4,524,261

LOCALIZED VACUUM PROCESSING APPARATUS

Paul F. Petric, Swampscott, and Michael S. Foley, Beverly, both of Mass., assignors to Varian Associates, Inc., Palo Alto, Calif.

Filed Sep. 19, 1983, Ser. No. 533,822
Int. Cl.³ B23K *15/00*
U.S. Cl. 219—121 EL **25 Claims**



1. Apparatus adapted for attachment to a vacuum processing chamber for localized vacuum processing of a workpiece, said apparatus comprising:

a housing member including a bottom plate with a downwardly extending first sleeve having an aperture therethrough and an upwardly extending flange around the periphery of said plate, said flange including a plurality of ports for vacuum pumping, said bottom plate and said flange in combination defining an interior region of said housing member;

a lower plate mounted in said interior region of said housing member with a second sleeve extending downwardly into said aperture inside said first sleeve and having a tip coplanar with the tip of said first sleeve such that a first vacuum zone is defined between said first sleeve and said second sleeve and said first vacuum zone is in gas communication with a first one of said ports through a channel between said housing member and said lower plate; and

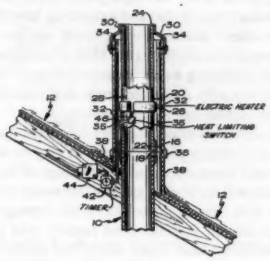
an upper plate mounted above said lower plate in said interior region of said housing member with a third sleeve extending downwardly into said aperture inside said second sleeve and having a tip coplanar with the tips of said first and second sleeves such that a second vacuum zone is defined between said second sleeve and said third sleeve and a high vacuum zone is defined inside said third sleeve, said second vacuum zone being in gas communication with a second one of said ports through a second channel between said lower plate and said upper plate and said high vacuum zone being in gas communication with a third one of said ports through the portion of said interior region above said upper plate.

4,524,262

ELECTRICALLY HEATED SEWER VENT LINE DEFROSTER

Cyril G. Meyer, 830 7th St. South, Breckenridge, Minn. 56520

Filed Jan. 31, 1983, Ser. No. 462,400
Int. Cl.³ H05B *1/00*
U.S. Cl. 219—213 **4 Claims**



1. A vent line defroster in combination with a plastic sewer vent line extending through a roof, said defroster being located above said roof and comprising:

a metal pipe having an exterior, a top and a bottom;

a heating element contacting at least a portion of said exterior of said pipe;

means for coupling the bottom of said pipe to said plastic sewer vent line; and

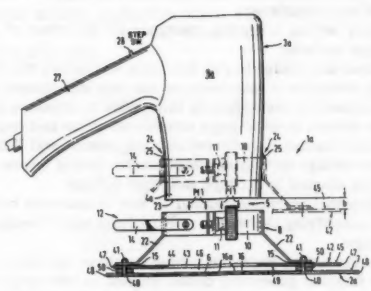
an outer shell having a top and a bottom surrounding and spaced outwardly from said pipe, said shell top being sealed to said pipe top and said shell bottom being sealed to said roof.

4,524,263

ELECTRIC TRAVEL IRON USING PORTABLE HAIR-DRYER AS THE HEAT SOURCE

Yücel Yamac, Graz, Austria, assignor to Braun Aktiengesellschaft, Kronberg, Fed. Rep. of Germany

PCT No. PCT/DE82/00087, § 371 Date Nov. 30, 1982, § 102(e) Date Nov. 30, 1982, PCT Pub. No. WO82/03643, PCT Pub. Date Oct. 28, 1982
PCT Filed Apr. 15, 1982, Ser. No. 451,151
Claims priority, application Fed. Rep. of Germany, Apr. 18, 1981, 3115696; Jan. 29, 1982, 3202978
Int. Cl.³ D06F *75/00*; A45D *20/12*; H05B *1/00*
U.S. Cl. 219—249 **23 Claims**



1. Electric iron, comprising:

a hand-held hot air type hair-dryer constituting an upper component of said iron, said dryer having a hand grip, providing its heating unit as a heat source for said iron, and having an outlet duct for discharge of a hot air stream from an open end of said duct;

an ironing plate;

means (8) for connecting said ironing plate to said hot air outlet duct and holding said ironing plate facing said open end of said duct and spaced therefrom, thereby presenting a direct hot-air impingement surface region of said ironing plate lying directly in front of said open duct end for impingement of hot air thereagainst,

said ironing plate, (2,2*a*) having a plane upper side (7) facing said open duct end (4, 4*a*) and extending laterally outward from said direct hot-air impingement surface region and hence beyond the contour (18, 18*a*) of said open duct end (4, 4*a*) for providing a rim region capable of being heated by hot air laterally deflected from said direct hot-air impingement surface region, and

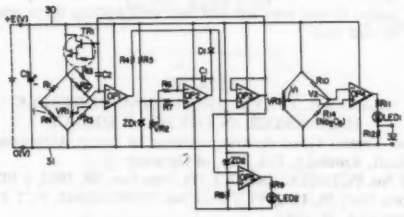
a reflection plate (42) interposed between said open duct end (4*a*) and said ironing plate (2*a*) and having an aperture (43) opposite said open duct end for passage of hot air therethrough for exit through a gap (46) between said reflection plate and said ironing plate (2*a*) after impingement upon said direct hot-air impingement region, said gap guiding said hot air along said upper side (7) of said ironing plate.

4,524,264

TEMPERATURE CONTROL APPARATUS

Takashi Takeuchi; Hideaki Takahashi, and Haruyoshi Kondo, all of Aichi, Japan, assignors to Kabushiki Kaisha Toyota Chuo Kenkyusho, Aichi, Japan

Filed May 11, 1983, Ser. No. 493,698
Claims priority, application Japan, May 13, 1982, 57-79213
Int. Cl.³ H05B *1/02*
U.S. Cl. 219—497 **5 Claims**



1. A temperature control apparatus for and oxygen sensor, comprising:

a substrate having upper and lower major surfaces;

an oxygen sensor including a gas sensor arranged on one of said major surfaces;

a heater having a heating resistance on the other of said major surfaces;

a Wheatstone bridge having four sides and having the heating resistance of said heater in one said side thereof and resistances in the remaining three sides to achieve a voltage balance to set a target temperature when said oxygen sensor reaches a predetermined temperature, said Wheatstone bridge serving as a temperature setting means and being adapted to produce an output voltage;

a differential amplifier coupled to said Wheatstone bridge for amplifying the output voltage from said Wheatstone bridge;

ramp rate setting means for setting a voltage rise rate;

ramp function generating means coupled to said ramp rate setting means for generating a low voltage output when said power is turned on and for gradually increasing the voltage output therefrom in accordance with the voltage rise rate set by said ramp rate setting means linearly as a function of time after the power is turned on;

selecting means coupled to said differential amplifier and to said ramp function generating means for selecting the smaller of the output voltage from said differential amplifier and the output voltage from said ramp function generating means and for producing a selected voltage; and

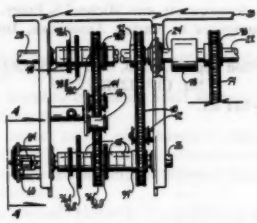
supply power control means coupled to said selecting means for controlling power to be supplied to said Wheatstone bridge in accordance with the voltage output of said selecting means.

4,524,265

MECHANICAL ACREAGE COUNTER

Thomas G. Dillman, R.R. 3, Grinnell, Iowa 50112, and Glen W. Dillman, R.R. 1, P.O. Box 33, Gilman, Iowa 50106

Filed Jan. 12, 1984, Ser. No. 570,248
Int. Cl.³ G01C *22/00*
U.S. Cl. 235—95 R **7 Claims**



1. A mechanical counter for determining the number of acres of land seeded in combination with an agricultural planter, said planter having a frame, a plurality of planting seed units spaced along the length of said planter for planting rows of seed, a drive wheel engaging said ground, and a power train including a first shaft rotatably driven by said drive wheel, a second shaft, a clutch disposed between said first and second shafts for selectively driving said second shaft, a third shaft driven by said second shaft, and a fourth shaft driven by said third shaft for operating said planting seed units, said seed being deposited from said seed units in response to rotation of said fourth shaft, said counter comprising:

a counter frame,

connecting means connecting said counter frame to said planter frame adjacent said third shaft,

a first gear attached to said third shaft for rotation therewith,

a second gear mounted on said counter frame in meshing engagement with said first gear, and

a readout means operatively connected to said second gear to display the number of acres seeded.

4,524,266

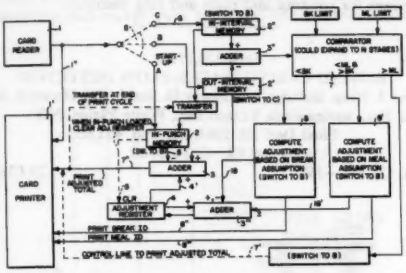
METHOD OF AND APPARATUS FOR DISCRIMINATING BETWEEN VARIOUS TYPES OF CHECK-OUT PERIODS IN EMPLOYEE TIME-RECORDING SYSTEMS AND THE LIKE

Lawrence Krakauer, Wayland, and Lawrence Bliss, Winchester, both of Mass., assignors to Kronos, Inc., Boston, Mass.

Filed Sep. 13, 1982, Ser. No. 416,719
Int. Cl.³ G06K *7/10*
U.S. Cl. 235—377 **4 Claims**

1. In a timecard recording apparatus, a method of monitoring the time between check-in and check-out of the timecard, that comprises, recording the check-in time on the timecard; storing the times of subsequent check-outs and check-ins; automatically comparing the time interval between each subsequent stored check-out and the next following check-in with predetermined permitted break, meal or related time intervals and recording the same on the timecard; and automatically computing the total time from the initial check-in time to the last check-out time which precedes a subsequent check-in time

occurring at a time period following the last check-out time greater than the predetermined time intervals, thereby automatically adjusting to include said permitted time intervals; and recording the total adjusted time upon the card.

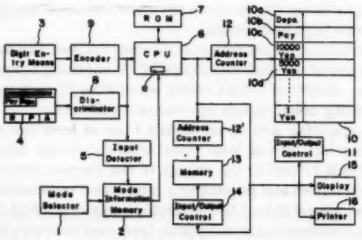


4,524,267

CASH ACCOUNTING SYSTEM HAVING DATA COMPILING CAPABILITY

Katsuji Nishimura, Habikino, and Hachizou Yamamoto, Nara, both of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Dec. 16, 1982, Ser. No. 450,474
Claims priority, application Japan, Dec. 24, 1981, 56-212228
Int. Cl.³ G06F *15/30*
U.S. Cl. 235—379 **2 Claims**



1. In a cash accounting system for registering and storing information regarding money transactions, means for facilitating auditing and checking said system and transactions comprising,

means for inputting data regarding money transacted in each transaction;

first memory means for separately storing first information related to amounts of money in each of a plurality of denominations transacted in each transaction;

second memory means for separately storing second information related to accumulated amounts of money in each of a plurality of denominations; and

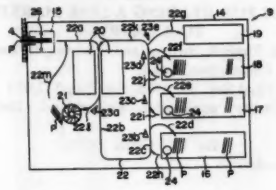
checking means associated with said second memory means, said checking means comprising means for segregating said second information related to each denomination into unit information representing numbers of units of currency items in such denomination, each unit having a predetermined monetary value, and fractional unit information representing a fractional portion of such unit.

4,524,268

AUTOMATIC BANK NOTE TRANSACTION SYSTEM

Kunio Fukatsu, Ebina, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Feb. 14, 1984, Ser. No. 580,135
Claims priority, application Japan, Feb. 15, 1983, 58-23294
Int. Cl.³ G06F *15/30*
U.S. Cl. 235—379 **13 Claims**



1. An automatic bank note transaction system comprising:

a central processing unit; and

a plurality of automatic bank note transaction apparatuses which are connected to said central processing unit in an on-line basis, each automatic bank note transaction apparatus including a housing; storing means disposed in said housing for storing bank notes therein; and detecting means for detecting the amount of the bank notes stored in said storing means and generating a detection signal,

regulating means for discriminating in response to the detection signal from said detecting means which automatic bank note transaction apparatus is capable of dispensing the bank notes since said storing means thereof is filled with the bank notes and, which automatic bank note transaction apparatus requires bank note replenishment since said storing means thereof is empty, and for generating a discrimination signal; and

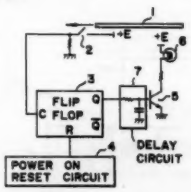
output means, connected to said regulating means, for generating output data representing the apparatus from which excessive bank notes are to be dispensed, and which apparatus is to be replenished with the bank notes in response to the discrimination signal from said regulating means.

4,524,269

CARD OPERATION INDICATOR FOR MAGNETIC CARD DRIVE DEVICES

Sadaaki Ezawa, and Hiroshi Kitagawa, both of Shizuoka, Japan, assignors to Kabushiki Kaisha Kawai Gakki Seisakusho, Japan

Filed Feb. 14, 1983, Ser. No. 466,365
Claims priority, application Japan, Feb. 23, 1982, 57-27838
Int. Cl.³ G06K *7/08*
U.S. Cl. 235—449 **3 Claims**



1. A magnetic card generation indicator for a magnetic card drive device which is provided with a head for reading data from or writing data in one of two recording zones of a magnetic card, comprising:

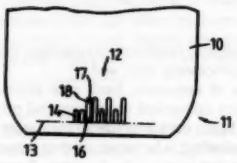
detecting means for detecting whether the insertion of the magnetic card into the magnetic card drive device is a first or second insertion;

delay means for providing a predetermined delay time after the insertion of the magnetic card;
an indicator lamp; and
control means for controlling the indicator lamp by the outputs of the detecting means and the delay means to light, put out and turn ON and OFF the indicator lamp.

4,524,270
APPARATUS FOR READING A LINE MARKING FIXED TO A CARRIER

Hans Martin, Thalwil, Switzerland, assignor to Emhart Industries, Inc., Farmington, Conn.

Filed Sep. 30, 1983, Ser. No. 537,630
Claims priority, application Switzerland, Oct. 1, 1982, 5790/82
Int. Cl.³ G06K *19/06*
U.S. Cl. 235—494 **7 Claims**

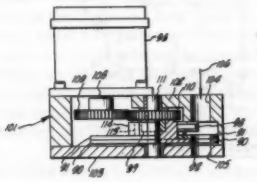


1. Apparatus for reading a line marking fixed to a carrier, the marking having longitudinal elements of different lengths which are substantially perpendicular to a joint, imaginary line, shorter elements being for use as pulse generator markings and longer elements being for use both as pulse generator markings and code symbols, the apparatus acting with an optical arrangement which displays the elements in time sequence on a reading surface in the movement of the marking carrier in the direction of the imaginary line, wherein the reading surface is divided into more than three consecutive sectors and that each sector is linked to an optoelectronic converter, and in that a first electronic switching mechanism produces a pulse signal if one element of the marking is displayed on at least one sector of the reading surface, and in that a second electronic switching mechanism produces a code signal if one element of the marking is simultaneously displayed on at least two sectors, which are separated from each other by at least one other sector or a preselectable number of other sectors.

4,524,271
LASER BLOCKING SHUTTER

Donald W. Parker, Arcadia, Calif., assignor to Cilco, Inc., Huntington, W. Va.

Filed Apr. 21, 1983, Ser. No. 487,117
Int. Cl.³ G01D *5/36*
U.S. Cl. 250—233 **7 Claims**

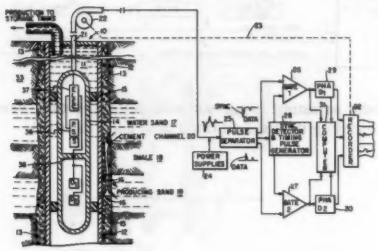


1. A shutter for blocking a laser beam comprising
a metal plate,
a plastic ring adjacent the plate, the plate and ring having a plurality of substantially equally spaced holes and solid areas between the holes, the holes providing a path for passing a laser beam,
housing means for housing the plate and ring and for allowing the plate and ring to be rotated in a step-wise fashion, said housing means being adapted to support the plate and ring to allow a laser beam to pass through a hole in the plate and ring assembly, and
means for rotating said plate and ring assembly.

4,524,272
BEHIND CASING WATER FLOW DETECTOR

Hans J. Paap, Bellaire, and Harry D. Smith, Jr., Houston, both of Tex., assignors to Texaco Inc., White Plains, N.Y.

Filed Dec. 20, 1982, Ser. No. 451,635
Int. Cl.³ G01V *5/00*
U.S. Cl. 250—265 **20 Claims**



1. A method for measuring the location, linear flow rate, and volume flow rate of undesired water flow behind well casing in a producing well, comprising the steps of:
(a) locating a well tool sized and adapted for passage through a well bore and having a source of high energy neutrons at least some of which have sufficient energy to cause the nuclear reaction O^{16} (n,p) N^{16} and at least two gamma ray detectors spatially arranged in a predetermined manner with said source and each other in a well bore at a depth to be investigated;
(b) irradiating the borehole environs with high energy neutrons from said source;
(c) detecting at said detectors gamma rays resulting from the decay of the unstable isotope N^{16} comprising a portion of any undesired behind casing water flow present and generating count signals representative thereof;
(d) separating said count signals from at least one of said detectors into at least three separate energy dependent signals related to the energy of the gamma rays causing said signals and generating a ratio signal representative of the ratio of at least two separate energy dependent signals;
(e) combining said count signals from said detectors according to a first predetermined relationship to derive an indication of the linear flow rate of undesired behind casing water flow in a preferred direction; and
(f) generating an indication of the volume flow rate of undesired behind casing water flow from said ratio signal, the energy dependent signal not used in the generation of the ratio signal and the linear flow indication in accordance with a second predetermined relationship.

4,524,273
METHOD AND APPARATUS FOR GAMMA RAY WELL LOGGING

Bernard G. Hubner, Houston, Tex., assignor to Dresser Industries, Inc., Dallas, Tex.

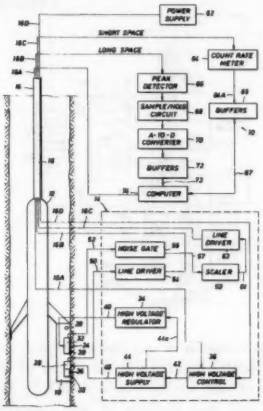
Filed Apr. 15, 1983, Ser. No. 485,151
Int. Cl.³ G01V *5/12*
U.S. Cl. 250—269 **20 Claims**

1. A method of investigating subsurface earth formations traversed by a borehole, comprising:
introducing a first plurality of photons into said formation;

introducing a second plurality of photons into said borehole having a known energy peak;

generating during a first time interval first electrical signals representing energy of photons from said second plurality and from a third plurality of photons from said formation;

detecting said energy peak from said first electrical signals;



generating during a second time interval second electrical signals representing energy from photons from second plurality of photons;

detecting said energy peak from said second electrical signals;

comparing said detected energy peaks from said first and second electrical signals; and

generating a control signal in response to said comparison.

4,524,274

METHODS AND APPARATUS FOR INVESTIGATING AN EARTH FORMATION AND COMPENSATING FOR BOREHOLE ENVIRONMENTAL EFFECTS

Hubert D. Scott, Houston, Tex., assignor to Schlumberger Technology Corporation, New York, N.Y.

Filed Aug. 5, 1982, Ser. No. 405,391

Int. Cl.³ G01V *5/10*

U.S. Cl. 250—269 **36 Claims**

1. A method for investigating an earth formation surrounding a mud-filled borehole, which comprises the steps of:

passing a logging tool, including a high energy neutron source and at least one pair of neutron detectors spaced at different distances from the neutron source, through the borehole;

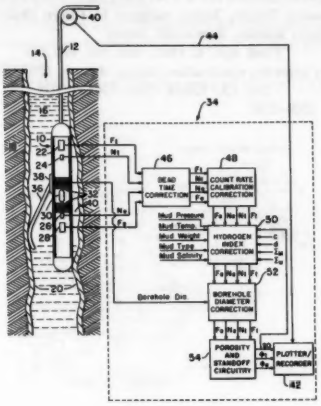
irradiating the borehole contents and the formation with neutrons from said source;

detecting neutrons that interact with the borehole contents and the formation with said detectors;

producing a signal indicative of the neutrons detected by each detector;

determining a measure of the effectiveness of the borehole mud as a neutron moderator; and

applying to each said detector signal a correction that is a function of the measure of the effectiveness of the borehole mud as a neutron moderator to produce a corrected signal.



4,524,275

MULTIPLE COLLECTOR MASS SPECTROMETERS

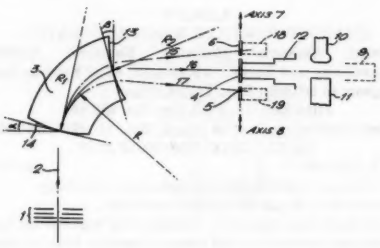
John S. Cottrell, 33 Banford Rd., Manchester M20 8QP; Patrick J. Turner, 61 Altrincham Rd., Wilmslow, Cheshire, and David J. Kay, 9 Redwood Close Barmton, Northwich, Cheshire, all of United Kingdom

Filed Dec. 6, 1982, Ser. No. 447,179

Claims priority, application United Kingdom, Dec. 7, 1981, 8136791

Int. Cl.³ H01J *49/30*

U.S. Cl. 250—298 **20 Claims**



1. An isotope ratio mass spectrometer suitable for use in the determination of isotope ratios, comprising; a mass selector including, a stigmatic sector magnet having a focal plane, an ion optical axis, entrance and exit pole faces which are inclined to said ion optical axis in order to cause at least first order focusing in two mutually perpendicular planes simultaneously, said exit pole face being so curved as to cause said focal plane to be substantially perpendicular to said ion optical axis; and means for detecting ion beams at a plurality of positions in said focal plane simultaneously, wherein focussing of ions on said focal plane is achieved solely by said stigmatic sector magnet.

4,524,276

APPARATUS FOR DETECTING A SECURITY THREAD EMBEDDED IN A PAPER-LIKE MATERIAL

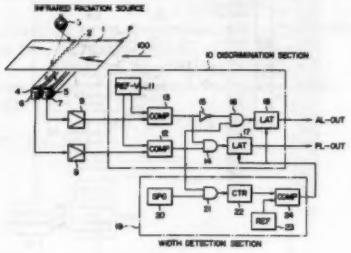
Ko Ohtombe, Tokyo, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Apr. 4, 1983, Ser. No. 481,944

Claims priority, application Japan, Apr. 6, 1982, 57-55993

Int. Cl.³ G06K *7/10;* **G01J** *5/08*

U.S. Cl. 250—338 **11 Claims**



1. An apparatus for optically detecting a security thread embedded in a paper-like material, comprising:

a radiation source for irradiating infrared rays to illuminate the paper-like material;

first detection means having a first filter adapted to selectively receive the infrared rays passing through the paper-like material and to deliver a first detection signal corresponding to the amount of infrared radiation incident onto the first detection means;

second detection means having a second filter with infrared radiation transmission characteristics different from the first filter, adapted to selectively receive the infrared rays passing through the paper-like material and to deliver a second detection signal corresponding to the amount of infrared radiation incident onto the second detection means; and

processing means connected to the first and second detection means for processing variations between the first and second detection signals so as to determine whether the security thread is present in the paper-like material and also what the security thread is made of.

4,524,277

CHARGED PARTICLE BEAM APPARATUS

Yoshimasa Shimura; Hideyuki Kakiuchi; Yoshihisa Minamikawa, and Katsuhiro Kawasaki, all of Katsuta, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Dec. 16, 1982, Ser. No. 455,941

Claims priority, application Japan, Dec. 18, 1981, 56-205574

Int. Cl.³ G01K *1/08;* **H01J** *3/00*

U.S. Cl. 250—397 **13 Claims**

1. A charged particle beam apparatus, comprising:

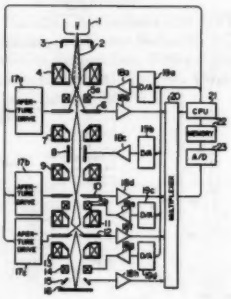
a source for a beam of charged particles;

an electron lens system for focusing the beam of chargeed particles emitted by said charged particle beam source;

at least a combination of deflecting means for deflecting said charged particle beam and an aperture member having an aperture through which said charged particle beam is passed;

a scanning signal source for supplying a scan signal to said deflecting means to thereby perform a two-dimensional scan with said charged particle beam; and

axis aligning means for correctively adjusting said combination in such a manner that the center axis of said aperture coincides with the center axis of said charged particle beam performing no scan, said adjustment being made on the basis of time-based variation in the quantity of the charged particles trapped by said aperture member when scanning with said charged particle beam is being performed in response to said scan signal, said axis aligning means including first means for detecting the quantity of the charged particles caught by said aperture member in terms of an electric signal, second means for determining the position of the center axis of said aperture on the basis



of time-based variation in said electric signal, third means for arithmethically determining deviation of said center axis position of said aperture determined by said second means from said axis position of said charged particle beam, and fourth means for correctively adjusting said combination on the basis of the deviation determined by said third means.

4,524,278

CHARGED PARTICLE BEAM EXPOSURE DEVICE INCORPORATING BEAM SPLITTING

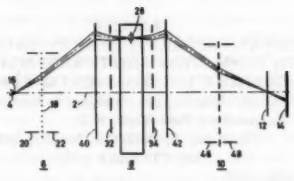
Jan B. Le Poole, Kennedyplantsoen 56, Voorschoten, Netherlands

Filed Feb. 14, 1983, Ser. No. 465,937

Claims priority, application Netherlands, Feb. 15, 1982, 8200559

Int. Cl.³ H01J *37/30*

U.S. Cl. 250—398 **28 Claims**



1. A device for exposing a target to be positioned in an object space to a beam of charged particles, said device comprising in sequence along an optical axis

a radiation source,

a first beam splitting device arranged near said radiation source, said first beam splitting device including two systems of parallel wires directed transversely to one another and means for applying mutually different potentials to said two systems of parallel wires,

a multiple beam deflection system including an electrode system and a beam modulation system,

a second beam splitting device, and

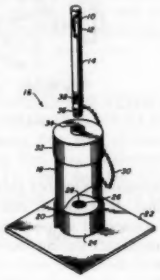
a target positioned near said second beam splitting device.

4,524,279

RADIATION SOURCE SHIELD AND CALIBRATOR

Charles L. Christianson, Laurel, and Richard Spurlock, Wheaton, both of Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Feb. 18, 1983, Ser. No. 467,727
Int. Cl.³ G21F 5/02
U.S. Cl. 250—497.1 8 Claims



1. An apparatus adapted to function as a shipping and/or storage container and as a calibration device for a predetermined radiation source associated therewith, comprising:

a case;

first means affixed to one end of said case so as to allow said case to stand vertically and to close the one end thereof;

second means affixed to the other end of said case opposite to said first means so as to allow the predetermined radiation source to be secured to said second means, and so as to close the other end of said case;

shielding means for absorbing radiation from the predetermined radiation source, said shielding means being fitted within said case at the one end thereof; and

storing and calibrating means including a rod having an ampule containing the predetermined radiation source embedded in one end thereof, and said rod being configured on the other end thereof so as to be insertable into said case via said second means to place the predetermined radiation source within said shielding means for carrying out of the shipping and/or storage function, and said rod being additionally configured on the same other end thereof so as to be attachable to said second means to place the predetermined radiation source a predetermined distance above said first means for carrying out of the calibration function.

4,524,280

METHOD FOR DETECTING DISPLACEMENT OF SEMICONDUCTOR DEVICE

Mitsuaki Ishikawa, Tokyo, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

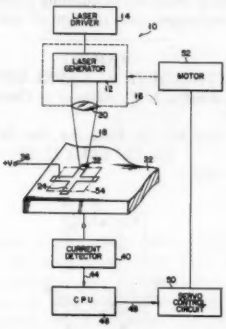
Filed Jun. 18, 1982, Ser. No. 390,033
Claims priority, application Japan, Jul. 27, 1981, 56-117432
Int. Cl.³ G21K 5/10
U.S. Cl. 250—548 15 Claims

1. A method for detecting a relative positional relation and rotational error between a predetermined coordinate system of a semiconductor device and a coordinate system of an energy beam apparatus when an energy beam is radiated onto a desired portion of said semiconductor device, said method comprising the steps of:

scanning a single substantially cross-shaped semiconductive layer, having a second semiconductor type and preformed on the top of a semiconductor device having a substrate of a first conductivity type, with said energy beam spotted on said semiconductor device once along a rectangular closed scanning loop, said semiconductive layer having first and second layer portions substantially overlapping each other to define the coordinate system of said substrate and an intersection thereof corresponding to a reference point of said substrate;

detecting a change in a current generated when said energy beam crosses said semiconductive layer of said semiconductor device;

detecting four points at which the current abruptly changes



and which correspond to four beam crossing points produced two each at said first and second layer portions of said semiconductive layer; and

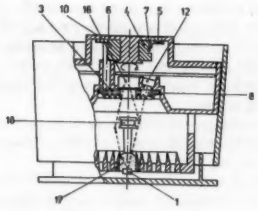
calculating said reference point of said semiconductor device and an angular displacement of the coordinate system of said semiconductor substrate from the coordinate system of said energy beam apparatus, based on data including said four points.

4,524,281

OPTICAL SMOKE DETECTOR WITH SENSITIVITY ADJUSTMENT

Jürg Muggli, Männedorf, Switzerland, and Peter Gruber, Stäfa, both of, assignors to Cerberus AG, Birmensdorf, Switzerland

Filed Nov. 3, 1982, Ser. No. 439,060
Claims priority, application Switzerland, Nov. 11, 1981, 7250/81
Int. Cl.³ G08B 17/10
U.S. Cl. 250—574 11 Claims



1. A smoke detector comprising:

a radiation source for emitting radiation in a predetermined radiation region;

a radiation receiver arranged externally of a direct radiation region of the radiation source;

said radiation receiver being impinged by radiation scattered by smoke particles located in the direct radiation region and delivering an output signal;

externally mechanically actuatable optical means for altering an output signal of the radiation receiver in a predetermined manner;

said optical means comprising a diaphragm displaceable

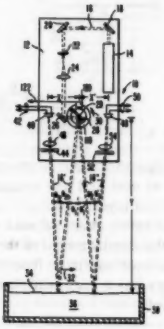
along a predetermined direction of radiation for constricting an active solid angle viewed by the radiation receiver;
means for displacing said diaphragm;
said displacing means comprising cam means including a cam groove and detent means engaging with such cam groove;
said detent means being operatively connected with said displaceable diaphragm; and
said displacing means accomplishing a defined displacement of said diaphragm upon rotation of said cam means.

4,524,282

ELECTRO-OPTICAL LEVEL DETECTOR

Charles King, Elmira, N.Y., assignor to Courser, Incorporated, Elmira, N.Y.

Filed Jun. 24, 1982, Ser. No. 391,654
Int. Cl.³ G01H *15/06*
U.S. Cl. 250—577 **17 Claims**



1. Level detection apparatus for measuring the depth of a surface, comprising:
a source of high intensity light;
scanning means adapted to be located above the surface to be measured, said scanning means being movable to scan a beam of light from said source repetitively across the surface;
first and second detector means responsive to reflections of said beam from the surface to be measured to produce corresponding output pulses, said detector means lying in a first plane which is common to said beam of light and normal to the surface to be measured;
means for generating a time-varying signal in synchronization with the movement of said scanning means;
first circuit means responsive to an output pulse from said first detector means to obtain a first sample of said time-varying signal;
second circuit means responsive to an output pulse from said second detector means to obtain a second sample of said time varying signal; and
third circuit means responsive to said first and second samples for producing output signals proportional to the angles at which said beam was reflected to said first and second detectors.

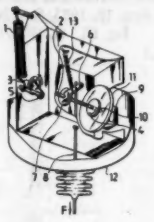
4,524,283

ENERGY CONVERTER

Väinö P. Latvus, Helsinki, Finland, assignor to Innovex Oy, Helsinki, Finland

Filed Jun. 16, 1983, Ser. No. 505,352
Claims priority, application Finland, Jun. 18, 1982, 822200
Int. Cl.³ F03G *1/00*
U.S. Cl. 290—1 E **9 Claims**

1. Device for converting mechanical energy of a type including slow or random movements into rotational energy, comprising:
a frame,
a crankshaft rotatable in one direction only in relation to the frame, said crankshaft including a crank;
a pair of freewheels arranged on the crankshaft and being operable to rotate in opposite directions about the crankshaft;



a longitudinal actuating member reciprocatingly movable in its longitudinal direction in relation to the frame and operatively connected at one end to both flywheels to rotate the crankshaft during movement of the actuating member in both directions; and a spring connected at one end to the frame and at the other end to the crank for storing the potential energy by causing the crank to rotate the crankshaft when the crank has passed a dead point determined by the actuating direction of the spring.

4,524,284,

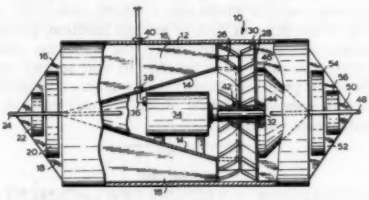
Patent Not Issued For This Number

4,524,285

HYDRO-CURRENT ENERGY CONVERTER

Hans G. Rauch, 426 Wayman Cir., West Palm Beach, Fla. 33406

Continuation-in-part of Ser. No. 75,429, Sep. 14, 1979, abandoned. This application Feb. 6, 1984, Ser. No. 577,201
Int. Cl.³ F03B *13/10*
U.S. Cl. 290—43 **9 Claims**



1. A power generating system for converting the kinetic energy of a stream of fluid flow into useable energy, said system comprising:
a venturi, said venturi comprising a first housing, said first housing being an elongate flow orifice comprising a flow constriction, said flow constriction being located within said first housing, said flow constriction dividing said first housing into a divergent flow entrance, a divergent flow exit and a throat, said flow constriction comprising a secondary sealed housing;
a turbine rotor located in said throat between said secondary housing and said divergent flow exit in the direction of fluid flow through said venturi, said turbine rotor being adapted to rotate responsive to said fluid flow;
shaft means adapted to transmit the rotational energy resulting from rotation of said turbine rotor;
a means for generating useable energy responsive to said rotational energy transmitted from said turbine rotor, said means for generating being located within said secondary

housing, whereby to convert said kinetic energy of said fluid flow to said useable energy;

wherein said fluid flow is water flow in a body of water, and said system comprises a floatation means for maintaining said system at a selected depth in said body of water; and

wherein said floatation means comprises one or more floatation tanks, said floatation tanks being at least partially liquid filled, and at least one compressed air tank, each said at least one air tank being effective to selectively inject compressed air into each said floatation tank to maintain said system at said selected depth.

4,524,286

DRIVE UNITS FOR MOTOR VEHICLES WITH INTERNAL COMBUSTION ENGINE ELECTRIC DRIVES

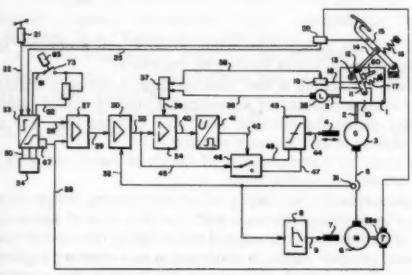
Manfred Kremer, Hamburg, Fed. Rep. of Germany, assignor to Still GmbH, Hamburg, Fed. Rep. of Germany

Filed Apr. 12, 1983, Ser. No. 484,309

Claims priority, application Fed. Rep. of Germany, Apr. 15, 1982, 3213927

Int. Cl.³ B60L *11/12*

U.S. Cl. 290—45 **9 Claims**



1. In a drive unit for a motor vehicle, such as an industrial truck and especially for a scoop loader, having an arbitrarily actuatable speed setting adjuster for adjusting the travel speed, an internal combustion engine wherein the speed setting adjuster is connected with a control signal transmitter and with a separately excited d.c.-current generator driven by the engine and with at least one d.c. motor that is separately excited and fed by the motorgenerator, a movement signal transmitting device that gives a signal that is dependent on the state of motion of the d.c. motor and wherein the signal of the control signal transmitter and the signal of the movement signal transmitting device are fed to a speed regulating unit, whose output signal is fed to a power regulating unit that controls the field excitation of the d.c. generator, and in which the signal of the control signal transmitter is conveyed through a nominal-value integrator, which in a delayed manner modifies the signal flowing to the speed regulating unit in accordance with a prescribed program, to the speed regulating unit when there are rapid changes in the signal of the control signal transmitter, the improvement comprising at least one means in the nominal-value integrator dependent upon an operating parameter of the motor vehicle which means acts upon and influences the delay program of the nominal-value integrator.

4,524,287

POST-COLLISION FIRE PREVENTION DEVICE

Wyley W. Brannen, P.O. Box 253, Statesboro, Ga. 30458

Filed Jan. 24, 1984, Ser. No. 573,415

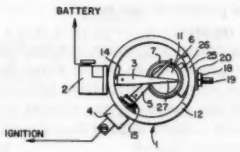
Int. Cl.³ H01H *35/14*; B60Q *1/44*

U.S. Cl. 307—10 R **8 Claims**

1. A safety device for switching off the electrical system of a motor vehicle upon impact of the motor vehicle with an object by connecting a switching system to interrupt the electrical system to reduce post-collision fires by preventing sparks from igniting the fuel, comprising in combination,

switching means for opening the electrical system of the motor vehicle,

a switch activating system connected to said switching means including a weight housed in a breakable tube, said weight operably releasable upon impact to fall and thereby activate said switching means thereby disconnect-



ing the electrical system of the motor vehicle to prevent sparks from the electrical system from igniting fuel, wherein said breakable tube includes a top opening and a base opening, said base opening including a stopper for sealing said opening, said breakable tube provided with a buffering system including a cushion positioned closely adjacent to said stopper and oil covering said weight in said breakable tube to reduce shock during normal operation of the motor vehicle.

4,524,288

SYSTEM FOR POWER SUPPLY TO AND SWITCHING OF A NUMBER OF ELECTRICAL APPLIANCES

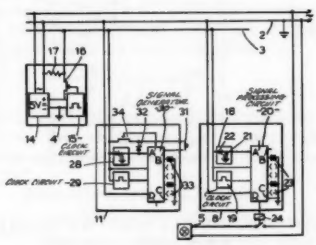
Laurens M. H. Schimmelpennink, Amsterdam, and Lambertus Spaanenburg, Hengelo, both of Netherlands, assignors to Moban B.V., Simpelveld, Netherlands

Filed Apr. 6, 1983, Ser. No. 482,482

Claims priority, application Netherlands, Apr. 7, 1982, 8201481

Int. Cl.³ H02J *3/14*; H04M *11/06*

U.S. Cl. 307—40 **8 Claims**



7. A system for supplying power to and switching electrical appliances, each of which has a functional power-consuming part and a switching part, comprising:

a power conductor connected to a power source and to the power consuming part of each of said appliances;

a clock pulse generator for generating a clock pulse signal;

signal transmitters for generating control signals for addressing the switching parts of said appliances, each transmitter generating when activated, a characteristic control signal that is a predetermined function of the clock pulse signal;

a signal conductor connecting all of said transmitters and switching parts, each of the transmitters and switching parts including a signal part which is structured so as to be configureable by manipulation thereof either as a signal generating part in a transmitter or as a signal processing

part in a switching part, each signal part including a time control part including:

a first gate circuit having "wait" and "run" signal outputs,

a first shift register, connected to an input of said first gate, for disabling the "run" signal upon the occurrence of a predetermined preamble of a control signal on the signal conductor,

a second shift register, connected to an input of said first gate circuit, for activating the "wait" signal upon cessation of an address portion of said signal,

a third shift register,

a second gate circuit, responsive to a disabling of said "run" signal, for generating an output signal for ensuring that said address portion is entered into said third shift register,

a comparator for comparing the address in said third shift register with a fixed address and generating an output signal indicative thereof,

a relay adapted to be activated by said comparator output signal indicating a positive comparison,

a fourth shift register for storing a control signal having a preamble and said fixed address, coupled so as to be controlled by an output of said second gate circuit, and

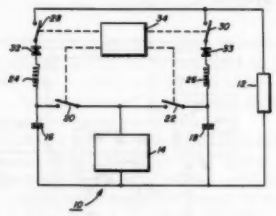
a switch for activating said second gate circuit for causing said fourth shift register to provide its contents to said signal conductor.

4,524,289

FLASH LAMP POWER SUPPLY WITH REDUCED CAPACITANCE REQUIREMENTS

Thomas J. Hammond, Penfield, and William L. Lama, Webster, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Apr. 11, 1983, Ser. No. 484,084
Int. Cl.³ H02M *3/18*
U.S. Cl. 307—110 **4 Claims**



1. A power supply circuit for supplying an output energy E_0 to a flash lamp, said power supply comprising:

a variable output, high voltage, low capacitance dc power supply,

at least a first and second capacitor charging circuit connected to said dc power supply and said lamp, each said charging circuit including a capacitor for storing an incremental portion of output energy E_0, and

means for cyclically and alternately connecting and disconnecting said charging circuits to and from said power supply and lamp so as to alternately store said incremental energy in each of said capacitors and subsequently to discharge said stored energy into said lamp,

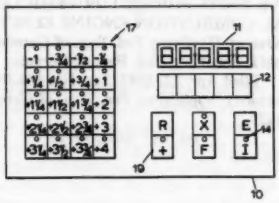
whereby the maximum output energy is delivered to said lamp in incremental portions such that the total output energy E_0 is the product of the energy discharged per cycle times the number of discharges from said charging circuits.

4,524,290

PHOTOGRAPHIC TIMER

Gene Nocon, Studio A, Floral Hall, Covent Garden, London WC2, England

PCT No. PCT/GB82/00320, § 371 Date Jun. 23, 1983, § 102(e) Date Jun. 23, 1983, PCT Pub. No. WO83/01846, PCT Pub. Date May 26, 1983
PCT Filed Nov. 9, 1982, Ser. No. 514,805
Claims priority, application United Kingdom, Nov. 12, 1981, 8134158; Jul. 16, 1982, 8220677
Int. Cl.³ H01H *43/00*
U.S. Cl. 307—141.4 **15 Claims**



13. A time switch comprising a clock and a counter for counting timing pulses emitted by the clock;

means for setting a base running time; a memory register having a plurality of addresses for holding digital values;

entry means for entering a set base running time into an address in said memory register;

an array of switches each of which is associated with a different multiplier value;

logic means for calculating values representing the products of multipliers associated with operated ones of said array of switches and the entered base running time and storing said product values in addresses in said memory register;

manually operated start means for starting the counter, running of said counter stopping whenever the count therein reaches a value equal to a value held by an address in the memory register;

display means for displaying the set base running time and, during a run, the elapsed running time;

switch means controlled to close only when said counter is running;

means for enabling the set base running time to be replaced by a new running time being the product of the previously entered base running time and a multiplier selected by operation of any one of said array of switches;

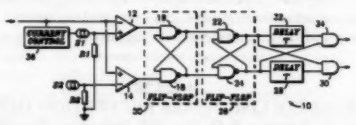
and reset means for resetting the counter to zero.

4,524,291

TRANSITION DETECTOR CIRCUIT

Heinz Lehning, Nyon, Switzerland, assignor to Motorola, Inc., Schaumburg, Ill.

Filed Jan. 6, 1983, Ser. No. 456,064
Int. Cl.³ H03K *5/153*
U.S. Cl. 307—354 **7 Claims**



1. A transition detector circuit for detecting when an input signal rises above a first value and falls below a second value different from said first value, the circuit comprising:

comparator means having an input for receiving the input signal and having an output, the comparator means pro-

ducing at its output a first output signal when the input signal rises above said first value and a second output signal when the input signal falls below said second value;

first bistable means having an input connected to said output of said comparator means and having an output, said first bistable means being set to a first stable state in response to said first output signal of said comparator means and producing at its output a first output signal indicative of said first stable state and being set to a second stable state in response to such second output signal of said comparator means and producing at its output a second output signal indicative of said second stable state; and

second bistable means having an input connected to said output of said first bistable means and having an output, said second bistable means being set to a first stable state in response to such first output signal of such first bistable means and producing at its output a first output signal indicative of such first stable state and being set to a second stable state in response to said second output signal of such first bistable means and producing at its output a second signal indicative of said second stable state.

4,524,292

ANALOG ARITHMETIC OPERATION CIRCUIT

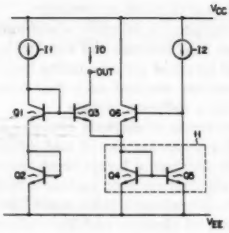
Katsumi Nagano, Shimonoseki, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Filed Sep. 3, 1982, Ser. No. 414,945

Claims priority, application Japan, Sep. 24, 1981, 56-151274; Oct. 30, 1981, 56-173787

Int. Cl.³ H03F *3/45, 3/04*

U.S. Cl. 307—494 **9 Claims**



1. An analog arithmetic operation circuit having a first and second power source, said circuit comprising:

a first transistor having a collector and a base coupled together;

a first input current source connected between said first power source and the collector-base connection of said first transistor;

a second input current source;

an output terminal;

a second transistor having a collector and a base connected to an emitter of said first transistor, the emitter of said second transistor being connected to said second power source;

a third transistor having a collector connected to said output terminal, the base of said third transistor being connected to the base of said first transistor;

a fourth transistor having a collector and a base connected to an emitter of said third transistor, the emitter of said fourth transistor being connected to said second power source;

a fifth transistor having a collector connected to said second input current source, said second input current source being connected between said collector of said fifth transistor and said first power source, the base of said fifth transistor being connected to the base of said fourth transistor, and the emitter of said fifth transistor being connected to said second power source, whereby said fifth transistor together with said fourth transistor constitute a current mirror circuit; and

a sixth transistor having a collector connected to said first power source, a base connected to the collector of said fifth transistor, and an emitter connected to the collector of said fourth transistor, whereby an output current in proportion to a squared value of current values of said first input current source is produced at said output terminal.

4,524,293

4-POLE ELECTRIC MOTOR

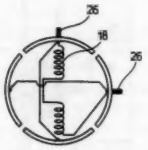
Fumito Komatsu, 69-1632-12, Nomura Aza, Ooaza Hirooka, Shioziri-shi, Japan

Filed Sep. 30, 1982, Ser. No. 431,422

Claims priority, application Japan, Oct. 6, 1981, 56-159709

Int. Cl.³ H02K *37/00*

U.S. Cl. 310—46 **10 Claims**



1. A 4-pole motor comprising a 4-pole armature within a 4-pole permanent-magnet ring, either the armature or ring serving as the rotor with the other serving as the stator, the electromagnetic-pole core of the armature being cross-shaped and having a rotary shaft at its center to define four core members extending radially outwardly of the shaft, one diametrically opposed pair of said core members having windings wound in the opposite directions with respect to each core member, back-up cores on the ends of cross-shaped cores of at least one pair of diametrically opposite core members, said back-up cores being separable from the respective core members, the back-up cores extending in the rotational direction of the armature when the armature is used as a rotor or in the direction opposite to the rotational direction of the ring when the ring is used as a rotor, and means for alternating the polarity of the electromagnetic poles every time the rotary shaft rotating in unison with the rotor rotates 90°.

4,524,294

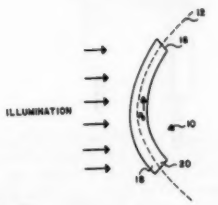
FERROELECTRIC PHOTOMECHANICAL ACTUATORS

Philip S. Brody, Bethesda, Md., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed May 7, 1984, Ser. No. 607,557

Int. Cl.³ H01L *41/08*

U.S. Cl. 310—311 **20 Claims**



1. A method for deforming materials which are ferroelectric, have remanent polarization, and which exhibit a length-dependent photoelectric effect, comprising the step of illumi-

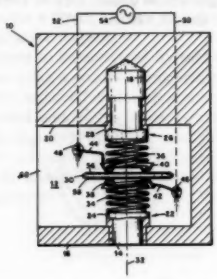
nating a plate of said material to cause the deformation of said plate.

4,524,295

APPARATUS AND METHOD FOR GENERATING MECHANICAL WAVES

Dwight L. Allensworth, and Peter J. Chen, both of Albuquerque, N. Mex., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Oct. 25, 1982, Ser. No. 436,557
Int. Cl.³ H01L *41/08*
U.S. Cl. 310—328 **9 Claims**



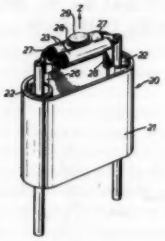
1. A method of inducing mechanical vibration in a medium comprising:
placing an electromechanical element in contact with said medium; and
subjecting said electromechanical element to an alternating electric field at only a single frequency which excites mechanical resonance of only said element therein, said frequency being lower than any electrical resonant frequency of said element.

4,524,296

CATHODE STRUCTURE FOR ELECTRON TUBE

Shouji Nakayama, Yokosuka; Yukio Takanashi, Hiratsuka; Toshiharu Higuchi, and Touru Yakabe, both of Yokohama, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Filed Dec. 1, 1982, Ser. No. 445,756
Claims priority, application Japan, Dec. 11, 1981, 56-198488
Int. Cl.³ H01J *1/94, 1/26, 19/48*
U.S. Cl. 313—270 **9 Claims**



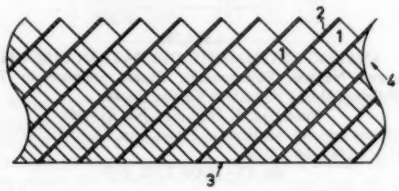
1. A cathode structure for an electron tube comprising:
a cathode holder;
a pair of metal sleeves arranged parallel each other;
two coiled filaments, each filament inserted in one said metal sleeve;
supporting means for connecting said metal sleeves to said cathode holder;
a metal substrate having a first surface facing said metal sleeves and a second surface, said substrate attached to both said metal sleeves to form a space between a central portion of said first surface and said metal sleeves; and
an electron emitting member disposed on said second surface of said metal substrate.

4,524,297

THERMIONIC CATHODE AND METHOD OF MANUFACTURING SAME

Georg Gärtner, Aachen, Fed. Rep. of Germany, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Sep. 13, 1982, Ser. No. 416,840
Claims priority, application Fed. Rep. of Germany, Feb. 18, 1982, 3205746
Int. Cl.³ H01J *1/13*
U.S. Cl. 313—346 R **18 Claims**



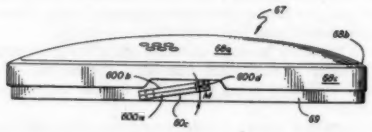
1. A thermionic cathode comprising:
(a) a body including a plurality of alternating layers of polycrystalline base material and electron emissive material,
each of said layers of polycrystalline base material comprising crystallites oriented such that facets thereof collectively form a diffusion surface,
each of said layers of electron emissive material being disposed on a respective one of said diffusion surfaces,
ends of said alternating layers being shaped to collectively form an electron emission surface which macroscopically makes an oblique angle with said diffusion surfaces; and
(b) a quantity of electron emissive material disposed on at least portions of the electron emission surface located to receive desorbing electron emissive material from the diffusion surfaces.

4,524,298

COLOR CATHODE RAY TUBE INCORPORATING IMPROVED THERMAL COMPENSATION TYPE APERTURE MASK SUPPORTING MEANS

Stanley L. Pawlikowski, Seneca Falls, and Richard A. Tamburrino, Auburn, both of N.Y., assignors to North American Philips Consumer Electronics Corp., New York, N.Y.

Filed Jul. 5, 1983, Ser. No. 510,496
Int. Cl.³ H01J *29/81*
U.S. Cl. 313—405 **2 Claims**



1. A color cathode ray tube comprising: an evacuated glass envelope having face panel, funnel and neck portions; a phosphor screen on the interior surface of the face panel; an electron gun in the neck for directing three electron beams toward

the screen; an aperture mask positioned adjacent the screen to direct the electron beams to desired phosphor elements on the screen, the mask having an apertured face portion and a sidewall portion; a supporting frame positioned inside and attached to the inner surface of the mask sidewall; a plurality of mounting studs protruding from the sidewall of the face panel; and a plurality of elongated mask supporting bimetal spring brackets, each having one end fixed to the sidewall of the mask frame and a free apertured end engaging a stud, each bracket comprising two relatively narrow elongated dissimilar metal elements joined edge to edge along their length dimension, with each aperture in the shape of an equilateral triangle with rounded apexes; the sidewall of the mask contoured to expose portions of the frame sidewall adjacent to the brackets and to allow clearance between the sidewalls of the mask and the brackets when deflected;

characterized in that the brackets are each comprised of rectangular shaped elements, and further characterized in that the apertures in the brackets are oriented to bridge the bimetal joints with one base of each triangular-shaped aperture parallel to the bimetal joint; and further characterized in that the brackets are fixed to the sidewall of the mask frame at an angle to the edge of the mask frame sidewall to achieve a desired Q-space between the mask and screen, as well as to permit deflection of the bracket inwardly toward the mask frame sidewall without interference with the mask sidewall.

4,524,299

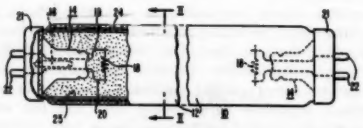
FLUORESCENT SUNLAMP HAVING CONTROLLED ULTRAVIOLET OUTPUT

George V. Preston, III, Plainsboro, N.J., assignor to North American Philips Corporation, New York, N.Y.

Filed Apr. 8, 1982, Ser. No. 366,890

Int. Cl.³ H01J *61/38, 61/40*

U.S. Cl. 313—487 **9 Claims**



1. A sunlamp of the low-pressure electric discharge type comprising;

a sealed envelope that is composed of glass which transmits radiation in the ultraviolet region of the spectrum and contains a pair of electrodes and an ionizable discharge-sustaining medium that generate ultraviolet radiations of various wavelengths, including undesirable ultraviolet radiations having wavelengths in the range from about 190 nm to about 260 nm and which are shorter than erythemal radiations, when the sunlamp is energized,

phosphor material within said envelope which converts discharge-generated ultraviolet radiations into erythemal radiations having wavelengths in the range from about 260 nm to about 320 nm, and

means for limiting the amount of said undesirable shorter-wavelength ultraviolet radiations that is emitted by the sunlamp to about 0.003 of the erythemal radiations, comprising a non-luminescent coating of finely-divided calcium pyrophosphate on the inner surface of said envelope and having particle sizes in the range from about 1 micron to about 40 microns,

said phosphor material being disposed in a separate layer that overlies the calcium pyrophosphate coating and thereby places the phosphor material in close proximity to the electric discharge and in direct radiation-receptive relationship with the phosphor-exciting ultraviolet radiations generated by the discharge,

said non-luminescent coating of calcium pyrophosphate being adapted to selectively absorb the undesirable short-wavelength ultraviolet radiations and thereby constituting an integral ultraviolet-filtering means for the sunlamp.

4,524,300

LUMINESCENT SCREEN AND LAMP CONTAINING THE SAME

Joseph Rutten; Gerardus P. F. Hoeks, and Johannes T. C. van Kemenade, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed May 7, 1984, Ser. No. 607,913

Claims priority, application Netherlands, May 13, 1983, 8301713

Int. Cl.³ C09K *11/465;* **H01J** *61/42*

U.S. Cl. 313—487 **7 Claims**

1. A luminescent screen provided with a carrier on which is formed a luminescent layer which comprises a luminescent material activated by bivalent europium or by trivalent chromium, which material is an aluminate and/or a gallate of strontium and/or barium, characterized in that the aluminate and/or gallate has an orthorhombic crystal structure with a space group P_{nnm} and has a composition defined by the formula $Me_{2-x}Eu_xA_{6-y}Cr_yO_{11}$, in which Me is mainly strontium or mainly barium, in that, when Me is mainly strontium, the Me is strontium of which up to 25 mol.% can be replaced by barium, A is aluminium of which up to 25 mol.% can be replaced by gallium, where $0.001 \leqq x \leqq 0.25$ and $y=0$, and in that, when Me is mainly barium, the Me is barium of which up to 50 mol.% can be replaced by strontium, A is gallium of which up to 25 mol.% can be replaced by aluminium, where $0.001 \leqq y \leqq 0.10$ and $x=0$.

4,524,301

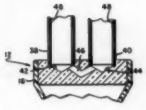
COMPACT FLUORESCENT LAMPS

Sheppard Cohen, Danvers; Nikolaos Barakitis, Haverhill; Frederick A. Loughridge, Ipswich, and Richard C. Marlor, Beverly, all of Mass., assignors to GTE Products Corporation, Stamford, Conn.

Filed Sep. 30, 1982, Ser. No. 431,955

Int. Cl.³ H01J *61/30, 61/88*

U.S. Cl. 313—493 **4 Claims**



1. A fluorescent lamp assembly comprising:

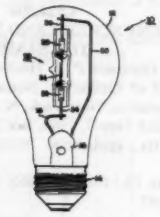
a housing terminating at one end in a base formed for electrical coupling with a socket; a receptacle fitted to the other end of said housing; a pair of U shaped fluorescent tubes mounted upon said receptacle, each of said tubes having a closed end carrying an electrode and an open end, said open ends being hermetically sealed to said receptacle; and a passage formed in said receptacle connecting said open ends.

4,524,302

GENERAL SERVICE INCANDESCENT LAMP WITH IMPROVED EFFICIENCY

Ivan Berlec, South Euclid, Ohio, assignor to General Electric Company, Schenectady, N.Y.

Filed Aug. 1, 1983, Ser. No. 519,165
Int. Cl.³ H01K *1/34*
U.S. Cl. 313—579 **20 Claims**



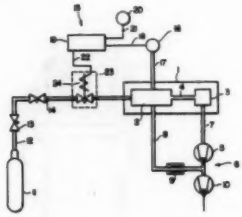
1. An improved general service incandescent lamp comprising:
(a) an electrically conductive base;
(b) an outer envelope hermetically sealed to said base;
(c) an inner envelope spatially disposed within said outer envelope and containing a halogen gas and a relatively high pressure fill-gas selected from the group consisting of xenon, krypton, argon and mixtures of these inert gases; and
(d) a tungsten filament spatially disposed within said inner envelope, said filament being specially adapted by having selected larger wire diameters and shorter wire lengths both relative to typical filaments so as to be effectively energizable for normal operating wattage rating at a reduced voltage relative to a typical household power source.

4,524,303

GLOW DISCHARGE TUBE FOR SPECTRAL-ANALYTICAL TESTS

Hermann Ritzl, Hauptstrasse 60, 8031 Seefeld 2, Fed. Rep. of Germany

Filed Jun. 3, 1983, Ser. No. 500,712
Claims priority, application Fed. Rep. of Germany, Jun. 4, 1982, 3221274
Int. Cl.³ H01J *7/24*
U.S. Cl. 315—111.81 **9 Claims**



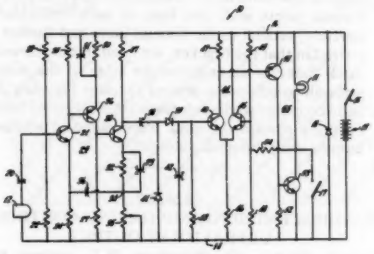
3. A glow discharge tube system for spectral-analytical tests, comprising:
an anode cavity;
a cathode cavity connected to said anode cavity through a restricted passageway;
an electrically controllable valve;
a carrier gas source connected through said controllable valve to supply carrier gas to said anode cavity;
first vacuum pump means connected to said anode cavity to produce a first pressure level therein;
second vacuum pump means connected to said cathode cavity to produce a second pressure level therein, said second pressure level being less than said first pressure level; and
control means for operating said controllable valve to maintain the pressure level within said anode cavity at a predetermined value.

4,524,304

SMOKE ALARM ACTIVATED LIGHT

Carl D. Todd, Costa Mesa, Calif., assignor to Gateway Scientific, Inc., Costa Mesa, Calif.

Filed Aug. 19, 1982, Ser. No. 409,584
Int. Cl.³ H05B *37/02*
U.S. Cl. 315—156 **2 Claims**



1. A light activated by the sound signal of a smoke alarm comprising;
a microphone;
a light bulb;
a source of power;
an amplifier circuit responsive to said microphone, said amplifier circuit including an adjustable feedback loop for controlling the gain thereof to compensate for different microphone sensitivities wherein said amplifier circuit comprises a direct coupled, multiple stage amplifier with a feedback capacitor between the first and last stages thereof whereby the feedback increases with increasing frequency;
circuit means including a first capacitor and rectifier means responsive to the output of said amplifier circuit for charging a second capacitor for producing a first voltage signal across said second capacitor, the value of said second capacitor being significantly higher than the value of said first capacitor, and means for draining the charge on said second capacitor;
means coupled to said power source for producing a second, reference voltage signal;
switch means interconnecting said source of power and said light bulb for selectively activating said light bulb; and
comparator circuit means responsive to said first and second voltage signals for activating said switch means when said first voltage signal exceeds said second voltage signal.

4,524,305

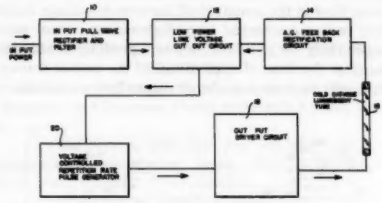
SOLID STATE REGULATED POWER SUPPLY SYSTEM FOR COLD CATHODE LUMINESCENT TUBE

Marshal H. Martin, Northridge, Calif., assignor to Indicator Controls Corp., Gardena, Calif.

Filed Aug. 8, 1983, Ser. No. 521,457
Int. Cl.³ H05B *37/02*
U.S. Cl. 315—221 **6 Claims**

1. A regulated solid state power supply system for a cold cathode luminescent neon tube, and the like comprising: an auto transformer having a winding; a power input circuit adapted to be connected to an energy source for providing a

power voltage for the system and having its output connected to one side of the auto transformer winding; a voltage controlled repetition rate pulse generator connected to the output of said power input circuit for producing constant duration output pulses at a variable repetition rate; an output driver circuit connected to the output of said pulse generator and to a tap on the auto transformer winding for generating a power pulse for the auto transformer in response to each output pulse



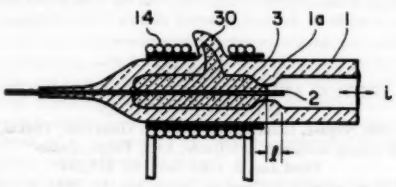
from the pulse generator; a feedback circuit having an output connected to the input of the pulse generator for producing a summation voltage for the pulse generator to control the repetition rate of the output pulses therefrom in conjunction with the power voltage from the power input circuit; and a cold cathode luminescent tube coupled in series with the other side of the auto transformer winding and the feedback circuit for providing feedback current to the feedback circuit.

4,524,306

EXTRA-HIGH PRESSURE MERCURY DISCHARGE LAMP

Takashi Fujimura, and Masahiro Nishizawa, both of Mobara, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed May 7, 1982, Ser. No. 376,124
Claims priority, application Japan, May 13, 1981, 56-70703
Int. Cl.³ H01J *11/04*
U.S. Cl. 315—326 **5 Claims**



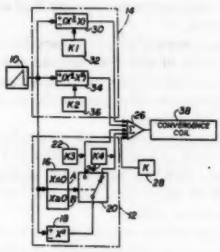
1. An extra-high pressure mercury discharge lamp comprising an end-sealed glass tube shaped to provide a long arc type tube, mercury contained in the both ends respectively of said glass tube, a pair of electrodes provided in the both ends respectively of said glass tube, said pair of electrodes being spaced from one another by a spacing no greater than 55 mm, each of said electrodes including one end portion extending toward the exterior from the associated end of said glass tube, an intermediate portion immersed in said mercury and the other end portion extending toward the interior beyond the surface of said mercury by about 1 to 3 mm and facing toward the middle of said glass tube, and a power source connected between said externally extending end portions of said electrode pair to supply power thereacross in the range of 1000 V to 2000 V, wherein said internally extending end portions of said electrode pair have a length for permitting said mercury discharge lamp to produce an emission profile such that the percentage of the emission energy concentrated in the region of D/2 (D: the inner diameter of the glass tube) is at least 68% of the total emission energy when the lamp current is in the range of 1.0 A to 1.6 A.

4,524,307

CONVERGENCE CONTROL SYSTEM FOR MULTIGUN CRT

Clayton C. Wahlquist, West Valley City, Utah, assignor to Tektronix, Inc., Beaverton, Oreg.

Continuation-in-part of Ser. No. 349,507, Feb. 17, 1982, abandoned. This application Apr. 15, 1982, Ser. No. 368,780
Int. Cl.³ H01J *29/70*
U.S. Cl. 315—368 **6 Claims**



1. A convergence correction system for a cathode-ray tube having a viewing screen, a plurality of electron beam sources, and an associated electron beam deflection system including means for producing horizontal and vertical deflection signals, said correction system comprising

means for receiving a deflection signal and for generating therefrom a first plurality of deflection-related signals for correcting beam convergence at a plurality of first locations on said screen and a second plurality of deflection-related signals for correcting beam convergence at screen locations intermediate said first locations,

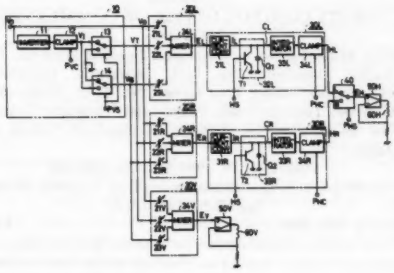
said second plurality of signals having substantially no effect on convergence at said first locations.

4,524,308

CIRCUITS FOR ACCOMPLISHING ELECTRON BEAM CONVERGENCE IN COLOR CATHODE RAY TUBES

Manabu Suzuki, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Jun. 1, 1984, Ser. No. 616,248
Int. Cl.³ H01J *29/70, 29/76*
U.S. Cl. 315—368 **5 Claims**



1. A circuit for accomplishing electron beam convergence in a color cathode ray tube comprising;

first voltage generating circuit means for producing a first voltage of parabolic waveform in a first polarity which has the vertical period and is clamped to be a reference potential at the beginning and end of each vertical scanning period, a second voltage composed of a portion of parabolic waveform in a second polarity, which has the

vertical period and is clamped to be the reference potential at the middle of each vertical scanning period, obtained during the first half of each vertical scanning period and a portion taking the reference potential during the second half of each vertical scanning period, and a third voltage composed of a portion taking the reference potential during the first half of each vertical scanning period and a portion of parabolic waveform in the second polarity, which has the vertical period and is clamped to be the reference potential at the middle of each vertical scanning period, obtained in the second half of each vertical scanning period,

first voltage mixing circuit means for adjusting the amplitude of each of said first, second and third voltages separately and then mixing the first, second and third voltages each adjusted in amplitude with one another to produce a first mixed voltage,

second voltage mixing circuit means for adusting the amplitude of each of said first, second and third voltages separately and then mixing the first, second and third voltages adjusted in amplitude with one another to produce a second mixed voltage,

third voltage mixing circuit means for adjusting the amplitude of each of said first, second and third voltages separately and then mixing the first, second and third voltages adjusted in amplitude with one another to produce a third mixed voltage,

second voltage generating circuit means for producing a first correcting voltage which has a waveform obtained by modulating the amplitude of a voltage of parabolic waveform having the horizontal period with said first mixed voltage and is clamped to be the reference potential at the middle of each horizontal scanning period,

third voltage generating circuit means for producing a second correcting voltage which has a waveform obtained by modulating the amplitude of the voltage of parabolic waveform having the horizontal period with said second mixed voltage and is clamped to be the reference potential at the middle of each horizontal scanning period,

switching means for extracting said first correcting voltage during the first half of each horizontal scanning period and said second correcting voltage during the following half of the horizontal scanning period, and

voltage supplying means for supplying the voltages extracted by said switching means and said third mixed voltage to deflecting means provided for deflecting electron beams in the color cathode ray tube to accomplish their convergence.

4,524,309

SAFETY CONTROL DEVICE OF COMMUTATOR MOTORS

Michio Hisatake, No. 4, Tamadaira, 2-chome, Hino-shi, Tokyo; Kazuji Yamamoto, No. 52-1, Saiwai-cho, 4-chome, Tachikawa-shi, Tokyo; Toru Hyodo, No. 17-27, Shibazaki-cho, 2-chome, Tachikawa-shi, Tokyo, and Yoshitaka Takahashi, No. 20-28, Hon-cho, 2-chome, Koganei-shi, Tokyo, all of Japan

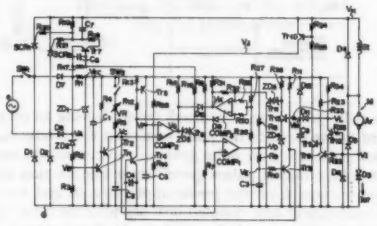
Filed Dec. 18, 1981, Ser. No. 332,359

Claims priority, application Japan, Dec. 22, 1980, 55-180540

Int. Cl.³ H02K *17/32*

U.S. Cl. 318—434 **1 Claim**

1. A safety control device for a speed control circuit of a commutator motor having an armature and a stator and including an A.C. power source having predetermined power source periods, said motor being energized with a supply current from the A.C. power source and being provided with circuit means which cause a free wheel current to be produced in the motor by the inductance of the motor, said free wheel current flowing in the armature and the stator of the motor, a motor speed controller, a comparator circuit comparing a voltage due to an operated amount of the motor speed controller with a voltage due to an actual rotation speed of the motor, an ignition circuit responsive to an output of the comparator circuit and producing a signal, and semiconductor control elements responsive to the signal from the ignition circuit to make a full wave phase control of the motor supply voltage to thereby compensate for rotational variations of the motor, the control device comprising armature current detecting circuit means coupled to the motor armature and operative to detect successively, all through the power source periods and with the advance of the power source periods, the presence and absence of the sections of time series in which the supply current and the free wheel current flow in the armature of the motor; voltage maintaining circuit means connected to said detecting circuit means and being initially set to a level below a predetermined amount of voltage at the time of application of the power source to the motor, said maintaining circuit means being operative to pro-



gressively accumulate the voltage above the level in a lapse of time and to decrease the voltage when the supply current and the free wheel current flow in the armature of the motor or to increase the voltage when the supply current and the free wheel current cease to flow in the armature of the motor and to maintain the voltage over at least one cycle of the power source; and bistable circuit means connected to said ignition circuit and operative for nullifying said ignition circuit when said maintaining circuit means has a voltage below the level of said predetermined amount of voltage, said bistable circuit means switching the ignition circuit into an effective condition as said maintaining circuit means comes to accumulate the voltage above the predetermined level while no speed designation is made to the speed control circuit of the motor.

4,524,310

METHOD AND APPARATUS OF CONTROLLING INDUCTION MOTORS

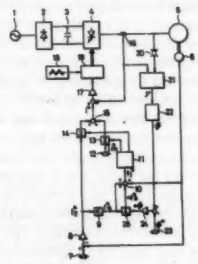
Hiroshi Nagase, Hitachi, and Toshiaki Okuyama, Toukai, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jan. 3, 1983, Ser. No. 455,294

Claims priority, application Japan, Jan. 11, 1982, 57-1812

Int. Cl.³ H02P *5/40*

U.S. Cl. 318—808 **10 Claims**



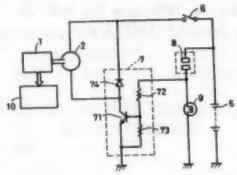
1. In a method of controlling induction motors in which the primary current of an induction motor is controlled, being divided into an excitation component and a torque component, and a slip frequency is instructed responsive to the torque

component, the improvement wherein a flux difference is detected between a flux instruction value and a real flux value of said induction motor, a value for correcting the slip frequency is found by said flux difference based upon the magnitude of a value for instructing the slip frequency, and the slip frequency of said induction motor is controlled so as to become equal to the sum of said value for instructing the slip frequency and the value for correcting the slip frequency.

4,524,311
CONTROL FOR PUMPING DEVICES USED IN VEHICLES

Mitsuyoshi Yokota, and Akio Matsumoto, both of Himeji, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 4, 1983, Ser. No. 549,182
Claims priority, application Japan, Nov. 12, 1982, 57-171903[U]; Nov. 12, 1982, 57-171906[U]
Int. Cl.³ B60T *13/66*
U.S. Cl. 318—481 **9 Claims**



1. A control for a pumping device for use in a vehicle comprising:

power supply means;

a motor supplied with electrical power from said power supply means;

a pumping means for use in the vehicle including a pump activated by said motor for generating a pressure;

a pressure operating unit operable by the pressure from said pump;

control means for enabling said motor to activate said pump;

first actuating switch means for activating said motor in response to a particular operation of said vehicle, and

second actuating switch means, including pressure detecting switch means, for activating said motor in response to a result of a comparison of pressure, generated by said pump, with a threshold value,

said control means including means for enabling said motor in response to operation of either of said first or second actuating means.

4,524,312
CONTROL FOR PUMPING DEVICES USED IN VEHICLES

Akio Matsumoto, and Mitsuyoshi Yokota, both of Himeji, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 4, 1983, Ser. No. 549,183
Claims priority, application Japan, Nov. 12, 1982, 57-171905
Int. Cl.³ B60T *13/66*
U.S. Cl. 318—481 **14 Claims**

1. A control for a pumping device for use in vehicles comprising:

a DC power supply;

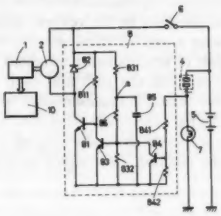
a DC motor;

a pumping device for use in the vehicles, including a pump activated by said DC motor for generating a pressure;

a power switch for supplying a DC voltage from said DC power supply to said DC motor;

a pressure-operating unit operable by the pressure from said pump;

an actuator switch for actuating said DC motor; and

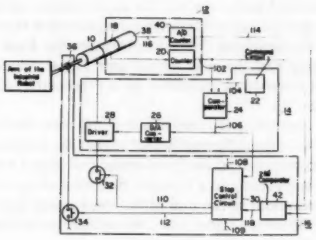


a control means for enabling said DC motor for only a given period of time in response to actuating of said power switch when said actuator switch is not actuated.

4,524,313
ERROR DETECTING MECHANISM FOR SERVOSYSTEM

Toshitaka Kuno; Hiroshi Moribe, both of Nagoya, and Atsushi Kamiya, Kariya, all of Japan, assignors to Kabushiki Kaisha Toyota Chuo Kenkyusho, Japan

Filed Feb. 3, 1983, Ser. No. 463,579
Claims priority, application Japan, Feb. 12, 1982, 57-21804
Int. Cl.³ G05B *9/02*
U.S. Cl. 318—563 **14 Claims**



1. An error detecting mechanism for a servosystem, comprising: a rotary angle detecting system including an encoder connected to a rotary shaft of a driving motor, for detecting a relative rotary angle of said driving motor and a potentiometer for detecting an absolute rotary angle of said driving motor; a driving-controlling system for driving and controlling said driving motor in accordance with a deviation value of a rotary angle detection value of said driving motor from a desired rotary angle; and an error preventing system for preventing a malfunction of said driving-controlling system; said error preventing system being provided with an emergency stop control circuit for effecting an emergency stop of said driving motor when a deviation value between said relative rotary angle detection value detected by said encoder and said absolute rotary angle detection value detected by said potentiometer exceeds a preset tolerance value.

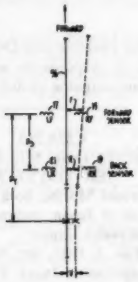
4,524,314
REAR TRAVEL GUIDANCE SYSTEM

Jack A. Walker, Sunnyvale, Calif., assignor to PORTEC, Lisle, Ill.

Filed Apr. 22, 1983, Ser. No. 487,608
Int. Cl.³ G05D *1/00*
U.S. Cl. 318—587 **4 Claims**

1. An improved, self-guided vehicle of the type which auto-

matically follows an externally defined path, and which has a ground-engaging steerable wheel, sensor means mounted on the vehicle for generating a position error signal representative of the position of the vehicle with respect to the path in the forward direction and representative of the position of a virtual sense point and the path in the reverse direction, the sensor means comprising a pair of front sensors and a pair of rear sensors, each pair of sensors being mounted on the vehicle so as to normally straddle the path and each pair producing a sensor pair signal which is representative of the difference of the outputs of the particular pair of sensors, and steering actuator means attached to the ground engaging steering wheel and responsive to the position error signal to control the orienta-



tion of the steerable wheel to automatically steer the vehicle along the external path, wherein the improvement comprises

means for generating a difference signal which is representative of the weighted difference between the front sensor pair signal and the rear sensor pair signal wherein the difference has been weighted by a predetermined quantity; and

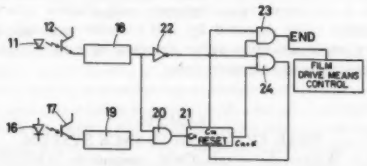
means for combining the sensor pair signal from the forward sensors with the difference signal so that the position error signal corresponds to the front sensor pair signal when the vehicle is traveling in a forward direction along the path and corresponds to the sum of the front sensor pair signal and the difference signal when the vehicle is traveling in a reverse direction along the path.

4,524,315

ROLL FILM CARRIER USED IN READER OR READER PRINTER

Keiji Nakatani, Kanagawa; Seiichi Yamagishi, Tokyo, and Kenjiro Ishii, Kanagawa, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Apr. 19, 1982, Ser. No. 369,867
Claims priority, application Japan, Apr. 24, 1981, 56-63102
Int. Cl.[3] G05B *19/28*
U.S. Cl. 318—603 **12 Claims**



1. A roll film carrier applicable to a reader or a reader printer, including:

supply reel means for supplying a roll film;

take-up reel means for winding up said roll film drawn from said supply reel means;

means for driving said take-up reel means so as to transport said roll film from said supply reel means to said take-up reel means;

means for generating signals corresponding to a predetermined rotation of said supply reel means;

means for generating pulses synchronously with substantially equal increments of said transport movement of said roll film along the length thereof; and

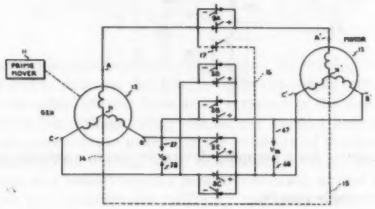
means for counting the number of pulses generated while said signal is being generated and controlling said drive means through comparison of the number of pulses counted with a predetermined number.

4,524,316

SPEED REDUCING CONTROL SYSTEM WITH VOLTAGE REGULATION FOR A POLYPHASE ELECTRIC MOTOR

Herbert J. Brown, and Thomas D. Stitt, both of Erie, Pa., assignors to General Electric Company, Erie, Pa.

Filed Oct. 11, 1983, Ser. No. 540,728
Int. Cl.[3] H02P *5/40*
U.S. Cl. 318—809 **15 Claims**



1. A "cycle-skipping" speed control system for a variable speed polyphase a-c electric motor comprising:

a. a 3-phase source of alternating voltage having a generally sinusoidal waveform, a fundamental frequency of "f" Hertz, and an rms magnitude of "v" volts;

b. at least three output terminals respectively adapted to be connected to different phases of said motor;

c. interconnecting means including at least first, second and third controllable bidirectional switches respectively connected between said output terminals and different phases of said source, each of said switches having a non-conducting state, a positive conducting state in which motor current flows through the switch in one direction, and a negative conducting state in which motor current flows through the switch in the opposite direction;

d. means coupled to preselected phases of said source for providing a train of timing pulses having a frequency that varies with f;

e. means for providing a speed command signal indicative of whether full motor speed or a fraction "1"/N of full motor speed is desired, where N is a predetermined integer;

f. means connected to said source and to at least two of said output terminals for producing a control signal representative of any deviation of the rms magnitude of voltage across said output terminals from the product of v times a predetermined proportionality constant; and

g. control means responsive to said control signal and to said speed command signal for cyclically producing, in synchronism with said timing pulses, a family of periodic firing signals that are effective selectively to initiate the conducting states of said switches, said family comprising six firing signals that respectively commence in a predetermined sequence at approximately 1/6f intervals when full speed is desired, and said control means being ar-

ranged, when a predetermined fraction of full speed is desired:

(1) to predetermine for each desired speed a particular combination and pattern of three different pairs of firing signals per family,

(2) to establish a series of recurrent periods synchronized with said timing pulses, each period having a duration of approximately N/f,

(3) to preselect for each desired speed three separate portions of each of said periods during which firing signals can be produced, with only one pair of firing signals being permitted during any one of the preselected portions,

(4) to produce in turn, during succeeding preselected portions of each period, the predetermined pairs of firing signals, whereby each firing signal in said family is produced at a frequency of f/N Hertz, and

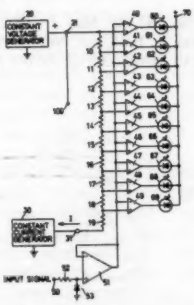
(5) to advance or to retard, as necessary to minimize said deviation, the time at which each pair of firing signals actually commences during each of said preselected portions of each period.

4,524,317

PRECISION, DYNAMIC LOW VOLTAGE MEASUREMENT SYSTEM

Leff Millard, R.D. #2 Box 288E, Whitehouse Station, N.J. 08889

Filed Aug. 23, 1983, Ser. No. 525,726
Int. Cl.³ G05F 3/08
U.S. Cl. 323—224 **4 Claims**



1. For use as a stepwise voltage reference:

a voltage divider consisting of a string of series connected resistors with tapping points along said string;

means for generating a constant current;

means for generating a constant voltage;

means for causing said constant current to flow through said series connected resistor string;

means for connecting said constant voltage to one point on said string of series connected resistors.

4,524,318

BAND GAP VOLTAGE REFERENCE CIRCUIT

Stephen R. Burnham, and Paul M. Henry, both of Tucson, Ariz., assignors to Burr-Brown Corporation, Tucson, Ariz.

Filed May 25, 1984, Ser. No. 614,337
Int. Cl.³ G05F 3/20
U.S. Cl. 323—313 **16 Claims**

1. An improved band gap voltage reference circuit comprising in combination:

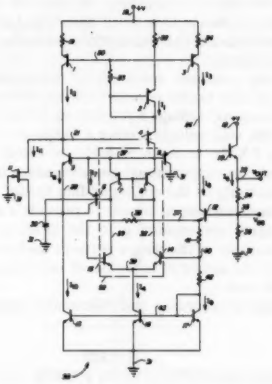
(a) a band gap cell including first and second NPN transistors and first and second PNP transistors, the emitters of said first and second NPN transistors being connected together, the emitters of said first and second PNP transistors being connected together, the collectors of said first PNP transistor and said first NPN transistor being connected together, the collector and base of said second PNP transistor being connected to the base of said first PNP transistor and to the collector of said second NPN transistor;

(b) a first resistor coupled between the bases of said first and second NPN transistors, and a second resistor connected to the base of said second NPN transistor;

(c) first constant current source means responsive to a first control current flowing through said first and second resistors for causing a first constant current to flow out of the junction between the emitters of said first and second NPN transistors, said first constant current source means also producing a second constant current substantially greater than said first constant current, said first constant current causing said first and second NPN transistors to produce a differential offset voltage across said first resistor to produce said first control current;

(d) a third NPN transistor having its emitter connected to supply said first control current to said first resistor;

(e) a third PNP transistor having its emitter coupled to the emitters of said first and second PNP transistors and having its base coupled to the collector of said first NPN transistor and having its collector connected to supply some of said second constant current;



(f) second constant current source means responsive to a second control current determined by said second constant current and the current flowing through said third PNP transistor for producing a third constant current, a portion of which flows through said third NPN transistor, and for producing a fourth constant current;

(g) a fourth PNP transistor having its base coupled to the emitters of said first, second, and third PNP transistors and its emitter connected to receive some of said third constant current,

(h) a fourth NPN transistor having its base coupled to the emitter of said fourth PNP transistor and its emitter coupled to the base of said third NPN transistor;

(i) a third resistor coupled to the base of said third NPN transistor, said fourth PNP transistor, said fourth NPN transistor, said second resistor, and said third NPN transistor providing high gain feedback from said band gap cell to produce said first control current in said first resistor to thereby apply said differential offset voltage between the bases of said first and second NPN transistors; and

(j) a fifth NPN transistor having its emitter coupled to the collector of said third PNP transistor and its base coupled to the emitter of said third PNP transistor, in order to effectively bootstrap the collector voltage of said third PNP transistor to the emitter of said third PNP transistor.

4,524,319

METHOD FOR THE DETERMINATION OF KINETICS OF STRUCTURE FORMATION IN A BINDER

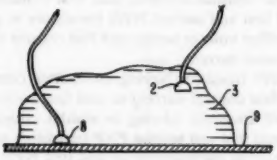
Igor L. Eberling; Lev A. Tereschenko; Nikolai I. Nikolaev; Arian M. Yakovlev; Vitaly I. Kovalenko, all of Leningrad; Nikolai K. Lipatov, Apatity Murmanskoi; Ruben A. Tatevosian, and Mikhail Y. Titov, both of Moscow, all of U.S.S.R., assignors to Territorialnoe Geolgicheskoe Upravlenie Tsentralnykh Raionov, Moscow, U.S.S.R.

Filed Feb. 26, 1982, Ser. No. 352,516

Claims priority, application U.S.S.R., Apr. 27, 1981, 3270005

Int. Cl.³ G01R *27/02;* **G01N** *11/00*

U.S. Cl. 324—65 R **2 Claims**



1. A process for monitoring structural changes in a binder having at least one solid object in contact therewith, during curing of the binder, comprising the steps of:

immersing a first conductivity monitoring pickup in a zone of said binder at the boundary between the binder and said solid object;

immersing a second conductivity monitoring pickup in a zone of said binder remote from said boundary;

applying an AC voltage not exeeding 50 mv. to each of said pickups, said voltage having a frequency in the range of about 5 KHz. to about 30 KHz., to cause each pickup to provide an output signal corresponding to the electrical conductivity of the corresponding binder zone;

comparing said output signals to provide a differential output signal corresponding to the difference in electrical conductivity of the binder between said zones and indicative of the extent of adhesion of said binder to said solid object; and

displaying or recording said differential output signal.

4,524,320

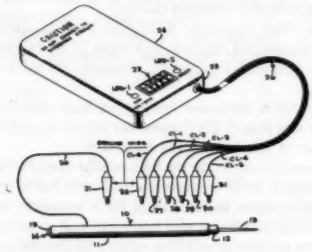
CONDUCTOR IDENTIFYING PROBE AND VOLTAGE SUPPLY DEVICE

Harvey L. Brooks, Gainesville, Ga., assignor to Gary A. Harrelson, Marbleton, Ga., a part interest

Filed Jun. 17, 1983, Ser. No. 506,400

Int. Cl.³ G01R *19/00*

U.S. Cl. 324—66 **14 Claims**



1. A portable probe-type conductor identifying and voltage supply device for identifying individual conductors in a plural conductor group extending through a conduit system, cable or the like, comprising a probe having a contact tip for engaging the individual conductors at one end of the plural conductor group and a grounding wire lead and terminal clamp device extending therefrom for releasable attachment to electrical ground at said one end, the probe further including a pair of light emitting diodes for emitting a first color and a second color respectively connected in reverse polarity parallel circuit arrangement between said contact tip and said grounding wire lead; a portable voltage supply unit including a casing housing batteries and having a plurality of manual switches and a like number of respectively associated connector leads with terminal clamp devices thereon and voltage control circuit means therefor, a grounding wire lead and clamp device for said voltage supply unit for attachment to electrical ground at a second end of the plural conductor group opposite said one end, said voltage control circuit means including means responsive to first and second pairs of said switches respectively to apply proper polarity voltages to their associated connector leads when connected at said second end to conductors of said group and when the probe tip engages such conductors to activate the diodes to emit their respective colors as steady light for said first pair of switches and as flashing light for said second pair of switches for identification of the conductors associated with said connector leads by such colors and light character emitted by the probe.

4,524,321

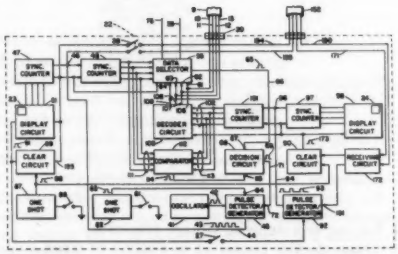
METHOD AND APPARATUS FOR TESTING CABLE WIRE CONNECTED TO TERMINALS AT A REMOTE LOCATION

Ali N. Jablway, Mt. Prospect, Ill., and Alexander M. Mitchell, Joppa, Md., assignors to AT&T Technologies, Inc., New York, N.Y.

Division of Ser. No. 382,749, May 27, 1982,. This application Aug. 1, 1984, Ser. No. 636,641

Int. Cl.³ G01R *31/02, 19/00, 15/12*

U.S. Cl. 324—66 **6 Claims**



5. A system for testing a group of wires interconnected between a first group of first terminals and a corresponding second group of second terminals, which comprises:

means selectively operable for sequentially impressing test signals to successive first terminals;

a probe means having a tip, and a first switch for connecting the tip to a probe output;

a first display means operable to present visual representations of successive numbers;

means responsive to placing the probe tip on a second terminal and the closure of the first switch for applying a test signal from corresponding first and second terminals and the interconnecting wire and through the probe output to operate the first display means to present the next successive number, to apprise the user of the probe that the wire interconnecting the corresponding first and second terminals is not open or that the wire is connected between corresponding terminals; said visual display being held from operation upon the wire being open so that the numerical representation is not changed to apprise the

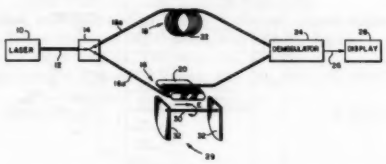
probe user that wire is open or not connected between corresponding terminals; and

means responsive to a test signal applied through the probe output indicative of a non-open wire for operating the selectively operable means to impress the test signal on the next succeeding first terminal.

4,524,322
FIBER OPTIC SYSTEM FOR MEASURING ELECTRIC FIELDS

Lloyd C. Bobb, Willow Grove, Pa., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Nov. 18, 1982, Ser. No. 442,497
Int. Cl.³ G01R *31/02, 31/00*
U.S. Cl. 324—72 **14 Claims**



1. A system for measuring an electric field, comprising:

a source of coherent light having a narrow optical frequency;

means optically connected to said source for splitting the coherent light into a pair of substantially equal beams;

first fiber-optic means optically connected to said beam splitting means for propagating one of said beams through an isolated environment via a first optical path length;

second fiber-optic means optically connected to said beam splitting means for propagating the other of said beams through the electric field via a second optical path length modulated piezoelectrically;

shield means rotatably disposed adjacent to said second fiber-optic means for periodically reducing the electric field to near-zero in the immediate proximity thereof; and

interferometric detector means optically connected to receive said beams from said first and second fiber-optic means for combining said beams while maintaining a quadrature relaionship therebetween;

whereby deviations from the quadrature relationship are indicative of the phase change, relative to said first fiber-optic means, in said second fiber-optics means induced piezoelectrically by and determinative of the value of the electric field.

4,524,323
CERAMIC COATED DIFFERENTIAL SENSOR COIL FOR USE ON A GUN MUZZLE VELOCIMETER

Jimmy Q. Schmidt, Baltimore, Md., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jun. 17, 1983, Ser. No. 505,560
Int. Cl.³ G01P *3/66*
U.S. Cl. 324—179 **5 Claims**

1. A ceramic coated differential sensor for use on a gun muzzle velocimeter which comprises:

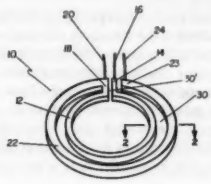
an inner loop having a first free end and a common inner-outer end;

a concentrically disposed outer loop, operatively spaced from said inner loop, having a second free end and another end integrally connected with said common inner-outer end;

wire connector means fixedly attached to said first and second free ends and to said common inner-outer end;

first plasma arc coating means for providing an undercoating surface to said inner and outer loops;

second plasma arc coating means operatively disposed over



said first plasma arc coating means for providing a wear and erosion resistance surface to said sensor; and

epoxy filler means for filling the open area intermediate said inner loop and said outer loop.

4,524,324
DOWNHOLE INSTRUMENT INCLUDING A FLEXIBLE PROBE WHICH CAN TRAVEL FREELY AROUND BENDS IN A BOREHOLE

Ben W. O. Dickinson, III, 2125 Broderick St., San Francisco, Calif. 94115

Continuation-in-part of Ser. No. 347,304, Feb. 9, 1982,. This application Jan. 28, 1983, Ser. No. 461,768
Int. Cl.³ G01V *3/18;* **E21B** *47/00, 29/02*
U.S. Cl. 324—323 **17 Claims**

1. In a package for use in a bore hole in the earth: an axially elongated flexible fabric casing of high tensile strength, payload within the casing for providing or receiving electrical signals, an elongated mass of flexible, cushioning material surrounding the payload and filling the casing to form flexible body which can be propelled through the bore hole in piston-like fashion by pressurized fluid and can travel around bends of relatively short radius in the bore hole, and a flexible cable extending axially from one end of the body and being secured to the casing of flexible material and connected electrically to the payload for carrying signals between the payload and the surface of the earth.

4,524,325
DUAL GUARD TYPE RESISTIVITY MEASURING APPARATUS

Robert A. Moore, and Edward P. Karisch, both of Houston, Tex., assignors to Halliburton Company, Duncan, Okla.

Filed Sep. 30, 1982, Ser. No. 431,539
Int. Cl.³ G01V *3/24*
U.S. Cl. 324—375 **6 Claims**

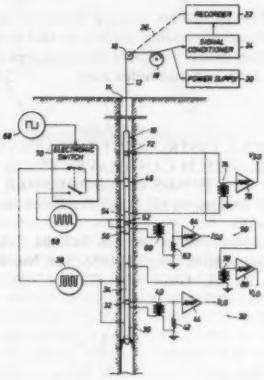
1. A well logging apparatus for measuring electrical properties of a formation intersected by a well bore wherein the electrical properties of the formation are substantially simulta-

neously measured at separate shallow and deep radial distances from the borehole comprising:

(a) a well logging sonde sized and adapted for movement along a borehole for resistivity logging of the formations adjacent said borehole;

(b) a first guard electrode system on said sonde having plural guard electrodes for focusing current to flow through the formation to a first lateral distance from the borehole, and a first current emitting electrode situated between said guard electrodes for emitting the first current;

(c) a second guard electrode system on said sonde having plural guard electrodes for focusing current to flow through the formation to a second different lateral distance from the borehole, and a second current emitting



electrode between said guard electrodes for emitting the second current;

(d) first electrical current source means for supplying a first guard current to said first guard electrode system;

(e) a second electrical current source means for supplying a second guard current to said second guard electrode system;

(f) a single return current electrode means providing current flow paths for said first and second current source means; and

(g) switching means for alternately connecting said first electrical current source means and said second electrical current source means to their respective guard electrode systems to complete current flow paths with said single return current electrode means.

4,524,326

DIGITALLY-DRIVEN SINE/COSINE GENERATOR AND MODULATOR

Michael E. Larson, Fond du Lac, Wis., assignor to AMCA International Corp., Fond du Lac, Wis.

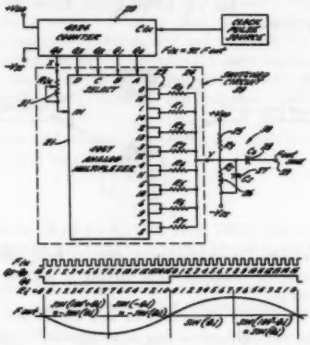
Filed Jul. 22, 1982, Ser. No. 401,008
Int. Cl.³ H03B *19/00*; H03K *13/02*
U.S. Cl. 328—14 **14 Claims**

1. A periodically modulating signal generator comprising, in combination,

(a) digital signal generating means for producing digital signals representing a phase number which periodically steps through successive numeric values, the digital signal having an alternating most significant bit signal and a less significant portion,

(b) digitally-controlled variable-gain analog circuit means having a digital gain control input accepting the less significant portion of the digital signal and an analog input and an analog output, for providing an analog output signal at the analog output that is the signal at the analog input scaled by a predetermined gain factor that is a predetermined function of the number represented by the signal on the digital gain control input, the gain factor being set by a particular gain circuit selected by a corresponding value of the signal on the digital gain control input, and comprising

means for cyclically selecting the gain circuits so that at least one of the gain circuits is activated by either of two complementary values of the signal on the digital control input, thereby generating a gain function of the signal on the digital control input that has even symmetry about a value generally between the minimum and maximum values of the less significant portion of the digital signal, and



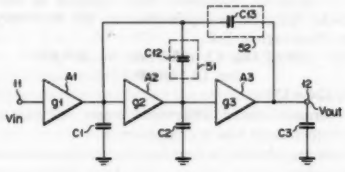
(c) means for exciting the analog input of the digitally-controlled variable-gain analog circuit means, the polarity of the excitation being specified at least in part by the most significant bit signal, so that a periodic analog signal is generated at the analog output of the digitally-controlled variable-gain analog circuit means, the periodic analog signal generally having odd symmetry about the times when the most significant bit signal changes changes its logic state, and even symmetry about times between the times when the most significant bit signal changes its logic state.

4,524,327

OPERATIONAL AMPLIFIER

Eiji Masuda, Kawasaki, and Kenji Matsuo, Yokohama, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Jul. 2, 1982, Ser. No. 394,615
Claims priority, application Japan, Jul. 9, 1981, 56-107473
Int. Cl.³ H03F *1/34, 3/45*
U.S. Cl. 330—253 **5 Claims**



1. An operational amplifier which comprises:

first amplifying means;

second amplifying means connected to the output of the first amplifying means and carrying out inverting amplification;

third amplifying means connected to the output of the second amplifying means and carrying out noninverting amplification with a gain of substantially 1, said third amplifying means including a source follower circuit and being formed of a noninverting amplifier whose output impedance is lower than its input impedance; said first, second and third amplifying means each comprising at least one MOS transistor;

first feedback means connected directly between the output and input of the second amplifying means and carrying out a phase-compensating function; and

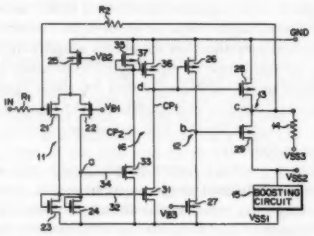
second feedback means connected between the output of the third amplifying means and the input of the second amplifying means and carrying out a phase compensating function.

4,524,328

MOS POWER AMPLIFIER CIRCUIT

Shouji Abou, and Itsuo Sasaki, both of Kawasaki, Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Filed Aug. 19, 1983, Ser. No. 524,783
Claims priority, application Japan, Aug. 20, 1982, 57-144474
Int. Cl.³ H03F *3/45, 3/26*
U.S. Cl. 330—253 **4 Claims**



1. A MOS power amplifier circuit comprising:

a pair of nodes for receipt of a first potential difference;

a terminal for receipt of a predetermined potential;

a load;

load drive means for driving said load in response to first and second load drive means input signals, said load drive means comprising first and second MOSFETs of the same channel type connected in series between said pair of nodes, with said load being connected in series between a point of common connection between said first and second MOSFETs and said terminal for receipt of said predetermined potential;

preamplifier means for operating at a second potential difference greater than said first potential difference to amplify an analog input signal, said preamplifier means comprising a differential amplifier pair of third and fourth MOSFETs supplied at their gates with said analog input signal and with a bias potential, respectively, a fifth MOSFET connected as a current source which supplies an operating current to said third and fourth MOSFETs, and sixth and seventh MOSFETs acting as loads for said third and fourth MOSFETs, respectively;

level changing means for changing the level of an output signal from said preamplifier means to provide said first load drive means input signal to said first MOSFET of said load drive means, said level changing means comprising an eighth MOSFET and a first current path, said eighth MOSFET receiving as an input current a current flowing through said sixth MOSFET, causing a current corresponding to this input current to flow into said first current path and constituting, together with said sixth MOSFET, a first current mirror circuit; a ninth MOSFET and a second current path, said ninth MOSFET receiving as an input current a current flowing through said seventh MOSFET, causing a current corresponding to this input current to flow into said second current path and constituting, together with said seventh MOSFET, a second current mirror circuit; and a third current mirror circuit comprising tenth and eleventh MOSFETs, said third current mirror circuit receiving as an input current a current flowing through said second current path and causing a current corresponding to this input current to flow into said first current path; and

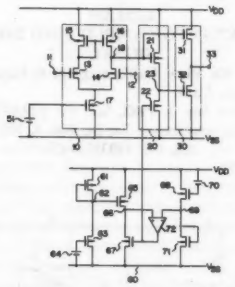
inverting amplifier means, operating at said second potential difference for inverting and amplifying said first load drive means input signal from said level changing means to supply said second load drive means input signal to the gate of said second MOSFET of said load drive means.

4,524,329

OPERATIONAL AMPLIFIER CIRCUIT

Shouji Abou, Kawasaki, Japan, assignor to Kabushiki Kaisha Toshiba, Japan

Filed Apr. 17, 1984, Ser. No. 601,362
Claims priority, application Japan, Apr. 21, 1983, 58-70444
Int. Cl.³ H03F *3/45*
U.S. Cl. 330—253 **15 Claims**



1. An operational amplifier comprising a first potential terminal, a second potential terminal, a signal input terminal, a signal output terminal, first, second, third and fourth circuit points, amplifying means for amplifying an input signal applied through said signal input terminal and producing the amplified signal at the output terminal, level shift means for shifting the level of the signal output from said amplifying means, output means for receiving the output signals from said amplifying means and from said level shift means and producing an output signal as specified by said input signals, and bias means for applying a bias voltage to said level shift means, said operational amplifier in which said level shift means includes a first MOS transistor of a first channel type in which the current path is connected between said first potential terminal and said first circuit point and the gate is connected to said output terminal of said amplifying means, and a second MOS transistor of said first channel type in which the current path is inserted between said second potential terminal and said first circuit point; said output means includes a third MOS transistor of said second channel type in which the current path is inserted between said first potential terminal and said output terminal and the gate is connected to said output terminal of said amplifying means, and a fourth MOS transistor of said first channel type in which the current path is inserted between said signal output terminal and said second potential terminal and the gate is connected to said first circuit point, and said bias means includes a fifth MOS transistor of said second channel type in which the current path is inserted between said first potential terminal and said second circuit point and the gate is connected to said second circuit point, a first constant current source inserted between said second circuit point and said

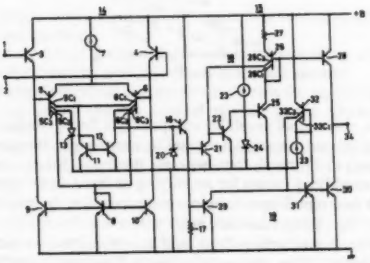
second potential terminal, a sixth MOS transistor of said first channel type in which the current path is inserted between said first potential terminal and said third circuit point and the gate is connected to said second circuit point, a seventh MOS transistor of said first channel type in which the current path is inserted between said third circuit point and said second potential terminal, a second constant current source inserted between said first potential terminal and said fourth circuit point, an eighth MOS transistor of said first channel type in which the current path is inserted between said fourth circuit point and said second potential terminal and the gate is connected to said fourth circuit point, and an amplifying section which is connected at a non-inverting input terminal to said third circuit point, at the inverting input terminal to said fourth circuit point, and at the output terminal to the gates of said second and seventh MOS transistors.

4,524,330

BIPOLAR CIRCUIT FOR AMPLIFYING DIFFERENTIAL SIGNAL

Lajos Burgyan, Mt. View, Calif., assignor to Signetics Corporation, Sunnyvale, Calif.

Filed Sep. 1, 1983, Ser. No. 529,075
Claims priority, application Japan, Sep. 4, 1982, 57-154300
Int. Cl.³ H03F *3/45*
U.S. Cl. 330—257 **19 Claims**



1. A circuit comprising:

first and second first-polarity bipolar input transistors having respective bases for receiving a differential input signal;

first and second transistor means each comprising at least one second-polarity bipolar transistor having at least one emitter, at least one base, a first collector, and a second collector, the second polarity being opposite to the first polarity, the emitters coupled to a first voltage supply, each base of the first means coupled to an emitter of the first transistor, each base of the second means coupled to an emitter of the second transistor, and the first collectors coupled together;

a PN diode forwardly coupled between the second collector of the first means and a second voltage supply; and

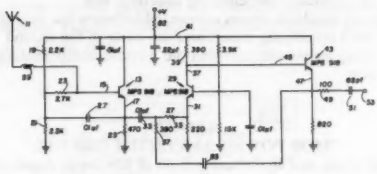
subtracting means comprising at least one first-polarity bipolar transistor having a first collector coupled to the first collectors of the transistor means, at least one base each coupled to the first collector of the subtracting means, at least one emitter each coupled to the second supply, and a second collector coupled to the second collector of the second means for supplying a composite output signal representative of the input signal.

4,524,331

HIGH INPUT IMPEDANCE AMPLIFIER CIRCUIT

Richard W. Faith, Hacienda Heights, Calif., assignor to Orion Industries, Inc., Compton, Calif.

Filed Sep. 13, 1982, Ser. No. 417,025
Int. Cl.³ H03F *1/38*
U.S. Cl. 330—292 **1 Claim**



1. A three-stage amplifier with a voltage supply for amplifying a single ac input signal received by a small radio-frequency antennae producing a single ac input signal, comprising:

first current amplification means for amplifying the current level of said single ac input signal to produce a first intermediate signal, including a first transistor connected in a common-collector configuration, said first current amplification means having low output impedance and a high input impedance;

single-stage feedback means coupling said first intermediate signal back to said single ac input signal, to supplement said single ac input signal thereby increasing the input impedance of said first current amplification means;

voltage amplification means including a second transistor connected in a common-base configuration, for amplifying said first intermediate signal producing a second intermediate signal, said first intermediate signal being coupled to the emitter terminal of said second transistor, an emitter resistor connected between said first intermediate signal and the emitter terminal of said second transistor, and a collector resistor connected between said voltage supply and the collector terminal of said second transistor, said voltage amplification means having a low input impedance; and a high output impedance;

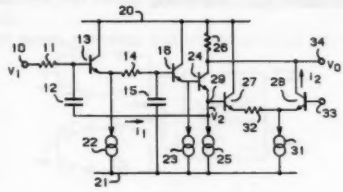
a second current amplfication means for amplifying the current level of said second intermediate signal to produce an output signal substantially in phase with said input signal including a third transistor connected in a common-collector configuration, said second intermediate signal being coupled from said voltage amplification means to the base terminal of said third transistor, said second current amplification means having a high input impedance; and

regenerative feedback means including a feedback resistor connected between the emitter terminal of said first transistor and the emitter terminal of said third transistor and, the resistance of said collector resistor being equal to the resistance of said feedback resistor, whereby said low output impedance of said first current amplification means is matched with said low input impedance of said voltage amplification means and the high output impedance of said voltage amplification means is matched with the high input impedance of the second current amplification means, thereby reducing losses due to mismatched impedances, and in combination with said regenerative feedback means and said single-stage feedback means, maximizes input impedance of said amplifier circuit.

4,524,332
INTEGRATED NOTCH FILTER

Michael J. Gay, Vaud, Switzerland, assignor to Motorola, Inc., Schaumburg, Ill.

Filed Feb. 10, 1982, Ser. No. 347,656
Int. Cl.³ H03F 1/34
U.S. Cl. 330—294 7 Claims



1. A notch filter having an input and an output and comprising: a low-pass section having an input coupled to the input of the notch filter, a first output, and a second output; feedback means coupled between the second output of the low-pass section and the input of the low-pass section; and a summing section having a first input coupled to the first output of the low-pass section, a second input coupled to the second output of the low-pass section, and an output coupled to the output of the notch filter, the summing section providing an output signal being the sum of a first component signal which is proportional to the first output signal of the low-pass section and a second component signal which is proportional to the current flowing in the feedback means such that the high-frequency response of the low-pass section is compensated, the low-pass section includes a first capacitor and the feedback means includes a second capacitor such that the notch filter includes a low-pass filter of the Sallen-Key configuration, and the low-pass section further comprises an output transistor having an emitter coupled to the input of the summing section, a base, and a collector, a first voltage terminal coupled to the collector of the output transistor; and the summing section further comprises a load resistor coupled between the collector of the output transistor and the first voltage terminal, a differential amplifier including a first transistor having a base coupled to the emitter of the output transistor, an emitter, and a collector coupled to the first voltage terminal, a second transistor having a base coupled to a bias voltage source, an emitter, and a collector coupled to the collector of the output transistor an emitter resistor coupled between the emitters of the first and second transistors, and a current source coupled to the emitter of the second transistor for providing bias current to the differential amplifier.

4,524,333
PHASE-LOCKED LOOP USING INTEGRATED SWITCHED FILTER

Atsushi Iwata; Takao Kaneko, both of Tokorozawa; Akihiko Ito, Kawasaki; Tadahiro Saito, Kawasaki, and Hirokazu Fukui, Kawasaki, all of Japan, assignors to Nippon Telegraph & Telephone Public Corporation, Tokyo and Fujitsu Limited, Kawasaki, both of, Japan

Filed Aug. 11, 1982, Ser. No. 407,150
Claims priority, application Japan, Aug. 12, 1981, 56-126248
Int. Cl.³ H03L 7/08
U.S. Cl. 331—17 9 Claims

1. A phase-locked loop circuit, operatively connected to receive an input signal and generating a feedback signal, comprising:

a phase comparator, operatively connected to receive the input signal and the feedback signal, for generating a first phase difference signal or a second phase difference signal in response to a phase difference between the input signal and the feedback signal;

a loop filter, operatively connected to said phase comparator, for generating a control voltage corresponding to the phase difference;

a voltage controlled oscillator, operatively connected to said phase comparator, controlled by the control voltage; and

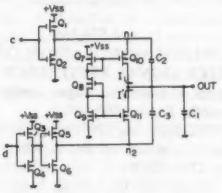
feedback means, operatively connected between said voltage controlled oscillator and said phase comparator, for providing the feedback signal to said phase comparator, said loop filter comprising:

a first input terminal, operatively connected to said phase comparator, for receiving the first phase difference signal;

a second-input terminal, operatively connected to said phase comparator, for receiving the second phase difference signal;

an output terminal, operatively connected to said voltage controlled oscillator, for outputting the control voltage to control said voltage controlled oscillator;

first, second and third capacitors, each having a first and a second terminal, each of said second terminals being operatively connected to said output terminal;



means, operatively connected to said first capacitor, for charging said first capacitor during a time period in which the first phase difference signal is generated and for discharging said first capacitor during a time period in which the second phase difference signal is generated;

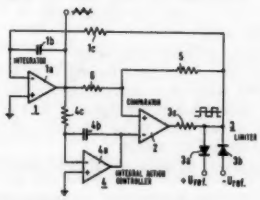
first switching means, operatively connected to said first terminal of said second capacitor and to said means for charging and discharging, for supplying a first pulse signal to said second capacitor when the first phase difference signal is generated by said means for charging and discharging; and

second switching means, operatively connected to said first terminal of said third capacitor and to said means for charging and discharging, for supplying a second pulse signal to said third capacitor when the second phase difference signal is generated by said means for charging and discharging.

4,524,334
TRIANGLE WAVEFORM GENERATOR

Antonio Brajder, and Klaus Hantke, both of Erlangen, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed May 4, 1983, Ser. No. 491,276
Claims priority, application Fed. Rep. of Germany, May 26, 1982, 3219815
Int. Cl.³ H03B 5/20
U.S. Cl. 331—135 3 Claims



1. In a triangle waveform generator having comparator

means, limiter means and integrating means, the comparator means having first and second inputs, a first input of said comparator means being coupled to the output of said integrating means, the output of said comparator means being coupled to said limiter means, the output of said limiter means being coupled to the input of said integrating means, the triangle waveform voltage being present at the output of said integrating means, the improvement comprising:

said limiter means being coupled directly to the output of said comparator means;

means for coupling the output of said comparator means to the first input of said comparator means; and

integral action controller means having an input coupled to the output of said integrating means, the output of said integral action controller means being coupled to the second input of said comparator means, said integral action controller means having a substantially longer time constant than said integrating means, whereby said integral action controller means compensates for asymmetries in the triangular waveform caused by said limiter means.

4,524,335

PULSE-WIDTH MODULATION CIRCUIT WITH CARRIER SIGNAL FREQUENCY CONTROL

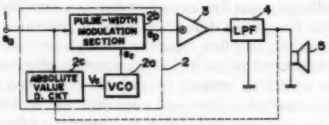
Kenji Yokoyama, Hamamatsu, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Japan

Filed Mar. 10, 1983, Ser. No. 473,777

Claims priority, application Japan, Mar. 13, 1982, 57-40045; Jun. 29, 1982, 57-97936[U]

Int. Cl.³ H03K *7/08*

U.S. Cl. 332—9 R **6 Claims**



1. A pulse-width modulation circuit comprising:

pulse-width modulation means in which a carrier signal is pulse-width-modulated by an input signal to generate a pulse signal having a duty factor corresponding to a level of said input signal;

level detecting means for detecting a level corresponding to said level of the input signal; and

carrier signal generating means for generating said carrier signal for said pulse-width modulation means, said carrier signal having a frequency which deviates in accordance with the detected level of said level detecting means, the frequency of said carrier signal being decreased as said detected level increases.

4,524,336

WIDE RANGE REFLECTIVE PHASE SHIFTER/MODULATOR

Earnest A. Franke, Goode, Va., assignor to General Electric Company, Lynchburg, Va.

Filed Oct. 15, 1982, Ser. No. 434,537

Int. Cl.³ H03C *3/00*

U.S. Cl. 332—16 R **3 Claims**

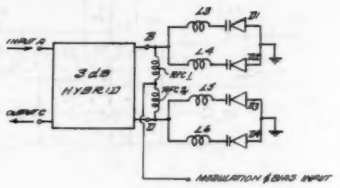
1. A phase modulator comprising:

a hybrid splitter of the type having first, second, third and fourth ports, wherein an input signal applied to said first port is split to form equal power signals at said second and fourth ports and signals input to said second and fourth ports are combined at said third port;

means for applying an input signal to be phased shifted to said first port;

a first reactive network having continuously variable reactance coupled to said second port, said first reactive network including first and second series circuits in parallel to one another, each series circuit including an inductor and a variable capacitance diode;

a second reactive network having continuously variable reactance coupled to said fourth port, said second reactive network including third and fourth series circuits in parallel with one another, each series circuit including an inductor and a variable capacitance diode;



means for applying a modulating signal to the inductors of each of said reactive networks simultaneously, the diodes of said networks always being reversed biased; and

means for deriving an output signal from said third port, said output signal being phase shifted with respect to said input signal at least in part as a function of the modulating signal applied to said inductors.

4,524,337

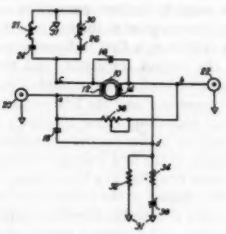
VARIABLE AMPLITUDE DELAY EQUALIZER

Billy W. Brinegar, Roswell, Ga., assignor to Scientific-Atlanta, Inc., Atlanta, Ga.

Filed Jul. 11, 1983, Ser. No. 512,592

Int. Cl.³ H03H *7/01*

U.S. Cl. 333—28 R **4 Claims**



3. An envelope delay distortion corrective network comprising:

(a) a 90° hybrid matrix having an input, an output, a first reference port and a second reference port;

(b) a reactive network connected to the first reference port to phase shift a signal applied to the matrix input; and

(c) an RC network comprising resistive and capacitive components connected to the second reference port to provide amplitude correction for the signal at the matrix output.

4,524,338

GANGED CIRCUIT BREAKER ARRANGEMENT

John F. Cotton, Athens, Ga., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Feb. 3, 1984, Ser. No. 576,681

Int. Cl.³ H01H *77/02*

U.S. Cl. 335—8 **9 Claims**

1. A ganged, multiple pole circuit breaker arrangement, comprising:

first and second multiple pole circuit breakers,

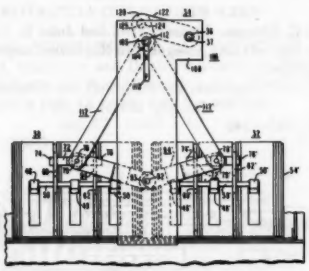
an operating pivot pin on each circuit breaker, predetermined movement of which results in the simultaneous

operation of the associated poles between their open and closed positions,

first means pivotally linking the operating pivot pins of said first and second circuit breakers to a first common pivot pin, with said first common pivot pin being fixed,

second means pivotally linking the operating pivot pins of said first and second breakers to a second common pivot pin,

third means mounting said second common pivot pin for



movement in a predetermined guided rectilinear path while restraining it against lateral movement, said guided rectilinear movement directing the axis of the second common pivot pin in a plane which includes the axis of said first common pivot pin,

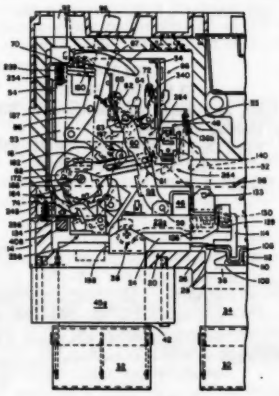
and fourth means for operating said second common pivot pin in its guided rectilinear path, with such movement causing simultaneous movement of the operating pivot pins of the first and second circuit breakers in a path about the axis of said first common pivot pin.

4,524,339

CONTACT CONTROL ARRANGEMENT FOR HIGH AMPERAGE MOLDED CASE CIRCUIT BREAKER

Ferdinand E. Chabot, Cedar Rapids, Iowa, assignor to Square D Company, Palatine, Ill.

Filed May 9, 1983, Ser. No. 492,901
Int. Cl.³ H01H *77/00*
U.S. Cl. 335—22 **26 Claims**



1. A circuit breaker having a latch assembly including a latch link pivotally supported adjacent one end in a frame and adapted to pivot in one direction against a bias force to open the contacts of said breaker, the improvement comprising:

a latch having a latch pivot defining an axis of rotation for said latch, said latch including an arcuate surface formed on an axis of rotation extending from said latch pivot and engaging said latch link along said arcuate surface at a position spaced from said one end of said latch link whereby any force tending to pivot said link in said one direction against said bias force is exerted along a radial line to said latch pivot,

means for rotating said latch in a respective direction to disengage said link and enable opening the contacts of said breaker,

a pair of toggle links having one pivot connection therebetween with one of said toggle links having a second pivot connection to said latch link,

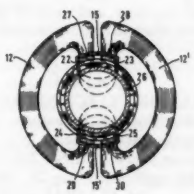
and means for applying a contact opening force to said latch link through said one and said second pivot connection for pivoting said latch link against said bias force with said latch having tangential engagement with said latch link for enabling rotation of said latch in said respective direction against a selected proportion of the contact opening force applied to said links.

4,524,340

DEVICE FOR DISPLAYING TELEVISION PICTURES

Albertus A. S. Sluyterman, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed May 2, 1984, Ser. No. 606,118
Claims priority, application Netherlands, May 2, 1983, 8301534
Int. Cl.³ H01F *1/00*
U.S. Cl. 335—212 **6 Claims**



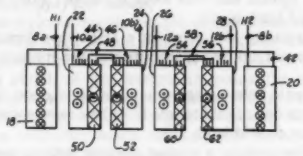
1. A device for displaying television pictures comprising a display tube the neck of which contains an electron gun system for emitting at least one electron beam towards a display screen and a deflection unit which is mounted coaxially about the display tube, which deflection unit comprises a line deflection coil system which when energized deflects the electron beam(s) in a first direction and a field deflection coil system which when energized deflects the electron beam(s) in a second direction transverse to the first direction, the said field deflection coil system comprising two field deflection coils each of the saddle type situated diametrically with respect to each other, each deflection coil comprising a plurality of conductors forming first and second lateral winding packets substantially extending in the longitudinal direction of the deflection unit which substantially coincides with the direction of the longitudinal axis of the display tube, an arcuate front end section and an arcuate rear end section which together define a window, to wherein at the rear end section of the field deflection coil system which end is adjacent the display tube's gun system are located first and second 'U' shaped members of soft magnetic material diametrically opposite to each other, each 'U' shaped member comprising a substantially arcuate transverse portion and first and second limbs, each 'U' shaped member bridging corresponding portions of adjacent lateral packets of the first and second field deflection coils with the transverse portion being positioned on the outer surface of said packets while the limbs extend towards the neck of the display tube.

4,524,341

TRANSFORMER WITH SERIES-PARALLEL-SERIES WINDING BETWEEN SPLIT WINDING

Donald W. Owen, 4619 Ridgeline Dr., Norman, Okla. 73069

Filed Feb. 7, 1983, Ser. No. 464,779
Int. Cl.³ H01F *21/12*
U.S. Cl. 336—147 **20 Claims**



1. A transformer, comprising:

first winding means for providing a first transformer winding, said first winding means including a first portion and a second portion; and

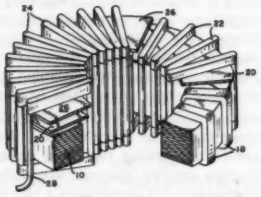
second winding means for providing a second transformer winding, said second winding means including a plurality of subwindings, each of said subwindings having a plurality of sections selectively connectable in electrical series-parallel-series with the sections of another of said subwindings so that a first parallel segment and a second parallel segment are defined when at least two of said sections are connected in electrical parallel, said second winding means disposed in inductive relationship with said first winding means wherein said second winding means and said first and second parallel segments thereof are entirely between said first portion and said second portion of said first winding means so that said first parallel segment and second parallel segment are equally spaced from said first winding means.

4,524,342

TOROIDAL CORE ELECTROMAGNETIC DEVICE

Joseph Mas, Morristown, N.J., assignor to Allied Corporation, Morris Township, Morris County, N.J.

Continuation-in-part of Ser. No. 334,751, Dec. 28, 1981, abandoned. This application May 21, 1982, Ser. No. 380,657
Int. Cl.³ H01F *27/28*
U.S. Cl. 336—182 **20 Claims**



1. An electromagnetic apparatus, comprising:

(a) a magnetic core having an enclosed trunk defining a central opening;

(b) a sectionalized primary winding having at least three primary coil sections encircling said trunk and circumferentially spaced about the periphery of said core, wherein each of said primary coil sections is a coiled, electrically conductive strip having on at least one side thereof, an insulating layer;

(c) a segmented secondary winding which includes a plurality of cleft links encircling said core and interconnected to provide a spiral current path, each of said cleft links having a portion passing through said central opening of said core and being circumferentially spaced about the periphery thereof;

(d) said cleft links comprised of a sequence of generally U-shaped members, each having a first leg, a second leg and a bottom piece, with the first leg of each of the members being electrically connected to the second leg of the succeeding one of the members by a jumper, said jumper having tapered holes located therein; and

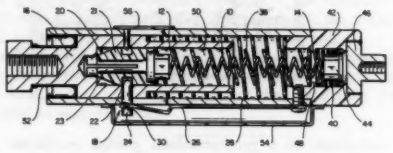
(e) said legs having tapered ends, with substantially the same taper as said tapered jumper holes, that are force fitted into said jumper holes to form said electrical connection.

4,524,343

SELF-REGULATED ACTUATOR

Robert K. Morgan, Pleasant Hill, and John R. Yaeger, Sunnyvale, both of Calif., assignors to Raychem Corporation, Menlo Park, Calif.

Filed Jan. 13, 1984, Ser. No. 570,464
Int. Cl.³ H01H *61/06*
U.S. Cl. 337—140 **12 Claims**



1. A self-regulated actuator comprising:

a shape-memory element capable of being longitudinally expanded when in its martensitic state and capable of being longitudinally recovered when in its austenitic state, said element capable of dimensional recovery when heated from said martensitic state to said austenitic state, said element having a first end and a second end along the longitudinal axis thereof;

a plunger located at the first end of said element;

a latch means connecting said plunger to said first end of said element when said element is longitudinally expanded, said latch means releasing said plunger at a predetermined position as said element recovers;

spring means connected to said plunger biasing said plunger away from said element, said spring means capable of moving said plunger away from said element when the plunger is released by the latch means; and

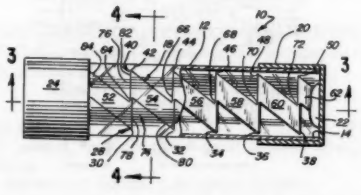
element return means biasing said first and second ends away from each other and capable of expanding said element when said element is in its martensitic state.

4,524,344

ELECTRIC FUSE

Aldino J. Gaia, St. Louis, Mo., assignor to McGraw-Edison Company, Rolling Meadows, Ill.

Filed Oct. 12, 1983, Ser. No. 541,239
Int. Cl.³ H01H *85/04*
U.S. Cl. 337—159 **16 Claims**



1. An electrical fuse having a fuse element, housing and

electrically conductive terminals, said fuse element comprising:

an elongated element body of electrically conductive material,

said fuse element body including first and second ends,

a plurality of substantially parallel weak spots,

a plurality of heavy portions separated by said weak spots, each of said weak spots lying between and separating two of said heavy portions, said heavy portions forming a plurality of peaks so as to define a saw-tooth configuration.

4,524,345

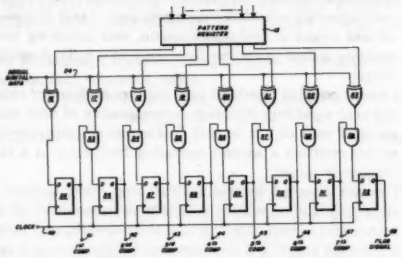
SERIAL COMPARISON FLAG DETECTOR

Randall Sybel, Marlboro, and Daniel Schwarzkopf, Stow, both of Mass., assignors to Prime Computer, Inc., Natick, Mass.

Filed Feb. 14, 1983, Ser. No. 466,208

Int. Cl.³ G06F *7/02*

U.S. Cl. 340—146.2 **9 Claims**



1. Apparatus for detecting a flag pattern in a serial sequence of digital data signals, comprising

means for simultaneously providing bit signals corresponding to the bits in the flag pattern,

a plurality of comparators for simultaneously comparing each data signal in its turn with all the bit signals, each comparator being adapted to compare the data signal with a different one of the bit signals and emit a set signal upon the occurrence of a match,

a shift register having at least as many stages as there are bits in the flag pattern, the shift register being adapted to advance a logic signal from each set stage to the next stage in response to a clock signal,

the comparator which compares the data signal with the bit signal corresponding to the first bit in the flag pattern having its output applied to the input of the first stage of the shift register,

a plurality of gates,

each stage of the shift register being connected to the next succeeding stage by a different one of those gates, each gate obtaining one input from the output of a corresponding one of the comparators and obtaining another input from the preceding stage of the shift register,

the comparator which compares the data signal with the bit signal corresponding to the second bit in the flag pattern providing the input signal to the gate connecting the first stage of the shift register to the second stage, the comparator which compares the data signal with the bit signal corresponding to the third bit in the flag pattern providing the input signal for the gate connecting the second stage to the third stage, the other gates and comparators being arranged in like manner in consecutive order corresponding to the order of the signal bits, and

each gate enabling a logic signal to be shifted from the preceding stage of the shift register to the succeeding stage only if the preceding stage was previously set and a set signal is received by the gate from its comparator.

4,524,346

CIRCUIT ARRANGEMENT FOR CONVERTING AN ANALOG AC VOLTAGE SIGNAL TO A DIGITAL SIGNAL

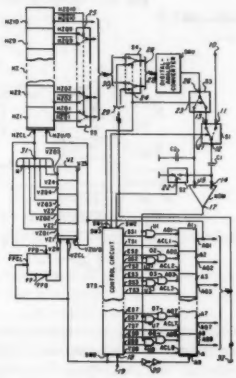
Hartmut Bosserhoff, Allershausen; Wolfgang Steinhagen, Mauern, and Ulrich Joeres, Freising, all of Fed. Rep. of Germany, assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Jul. 2, 1982, Ser. No. 394,980

Claims priority, application Fed. Rep. of Germany, Jul. 3, 1981, 3126380

Int. Cl.³ H03K *13/02*

U.S. Cl. 340—347 CC **3 Claims**



1. A circuit arrangement for converting an analog signal to a digital signal comprising:

means for cyclically sampling the analog signal and forming analog sampling values therefrom; and means for converting the analog sampling values to digital sampling values; said converting means comprising,

analog to digital converter means;

means coupled to said analog-digital converter means for integrating the signs of the digital sampling values, comprising counter means having a reversible counting direction dependent upon the sign of the digital sampling value, said counter means comprising,

precounter means;

main counter means;

decoding means coupled to the output of said precounter means and to the input of said main counter means for generating an output signal when said precounter means reaches a predetermined count, wherein upon the occurrence of said decoding means output signal said precounter means is reset and said main counter means is advanced one count, said decoding means comprising,

a NOR circuit having a plurality of inputs and an output, wherein one of said inputs is connected to the negating output of the highest value stage of said precounter means, said other NOR circuit inputs are connected to the non-negating outputs of said other stages of said precounter means, and said NOR circuit output is connected to the input of said main counter means; and

a bistable flip-flop circuit connected to said NOR circuit output and to said precounter means for resetting said precounter means upon the occurrence of an output signal from said NOR circuit;

means for generating a compensation voltage in dependence upon the output of said integrating means, said compensation voltage generating means comprising digital-analog converter means for converting the accumulated digital count in said counter means into a compensation voltage;

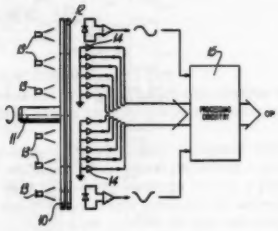
means for combining said compensation voltage with the analog sampling value from said sampling means, wherein

the output of said combining means is coupled to said analog-digital converter means and
means for storing said compensation voltage.

4,524,347
POSITION ENCODER

Douglas J. Rogers, Bonnyrigg, Scotland, assignor to Ferranti Limited, Cheshire, England

Continuation of Ser. No. 253,920, Apr. 14, 1981, abandoned. This application Apr. 18, 1983, Ser. No. 484,010
Claims priority, application United Kingdom, May 15, 1980, 8016094
Int. Cl.³ G08C 9/06
U.S. Cl. 340—347 P **22 Claims**

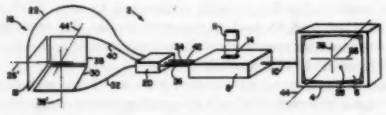


1. A position measuring device for measuring the position of an object relative to a datum position, the device comprising a position encoder for providing first positional information corresponding to the instantaneous position of the object relative to the datum position, a scale member adapted to be carried by the object, an index member fixed with respect to the datum position, the scale member and the index member having encoded tracks thereon, first circuit means responsive to the encoding on the tracks for providing two periodic sinusoidal waveforms in quadrature with one another, the periodic waveforms having a wavelength equal to a small incremental displacement of the scale member relative to the index member and having values corresponding to a predetermined fraction of the small incremental displacement; second circuit means responsive to the amplitudes of the periodic waveforms at predetermined points in each cycle thereof for determining errors present in the said waveforms caused by electrical or optical changes affecting components of said first circuit means and for applying appropriate corrections to the said waveforms; decoding means for determining from the two corrected waveforms second positional information corresponding to said predetermined fraction of said incremental displacement; and output means for combining said first positional information with said second positional information.

4,524,348
CONTROL INTERFACE

Leonard R. Lefkowitz, 14 Alpine Dr., Latham, N.Y. 12110

Filed Sep. 26, 1983, Ser. No. 535,813
Int. Cl.³ G08C 9/00
U.S. Cl. 340—365 R **11 Claims**



1. A control interface between a moveable physical object and a machine comprising:

(a) means for sensing and signalling any movement of said physical object in any direction in a defined field, said defined field being indentified by a plurality of antenna surfaces at least one surface of said plurality having a first field associated therewith which extends outwardly therefrom to form a region for sensing and signalling movement of said object in an X-dimension, at least another surface of said plurality having a second field associated therewith which extends outwardly therefrom to form a region for sensing and signalling movement of said object in a Y-dimension, and at least one other surface of said plurality having a third field associated therewith which extends outwardly therefrom to form a region for sensing and signalling movement of said object in a Z-dimension, said first, second and third fields being independent of each other and yet merging to form a common defined field, said sensing and signalling of movement of said object in said common defined field in any of said dimensions occurring without any physical contact of said object with any of said surfaces, and said plurality of surfaces being positioned to permit said object to be inserted into and removed from said common defined field;

(b) Means coupled to said at least one surface for receiving said signalling which is representative of said movement of said object in said X-dimension, said receiving means emitting a first operating frequency in a radio frequency range;

(c) means coupled to said at least another surface for receiving said signalling which is representative of said movement of said object in said Y-dimension, said receiving means emitting a second operating frequency in a radio frequency range;

(d) means coupled to said at least one other surface for receiving said signalling which is representative of said movement of said object in said Z-dimension, said receiving means emitting a third operating frequency in a radio frequency range, said first, second and third operating frequencies not interfering with each other during the presence of said object in said common defined field;

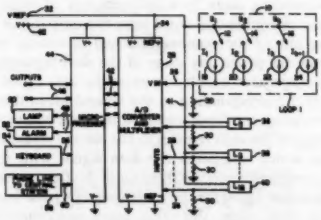
(e) means coupled to each of said receiving means for detecting the position of said object relative to the boundaries of said common defined field; and,

(f) means coupled to said detecting means for producing an input signal to said machine to move an element of said machine in an amount proportional to said object movement.

4,524,349
SECURITY SYSTEM HAVING DETECTOR SENSING AND IDENTIFICATION

David R. Hyatt, Portland, Oreg., assignor to Nel-Tech Development, Inc., Portland, Oreg.

Filed Aug. 9, 1982, Ser. No. 406,492
Int. Cl.³ G08B 29/00
U.S. Cl. 340—500 **17 Claims**



13. A security system having detector sensing and identification by analog signal amplitude, comprising:

sensor loop means including a plurality of sensor loops for generating detector signals when detectors in said loops are actuated, each sensor loop including a plurality of

detectors which are connected in parallel sensor circuits and are coupled to a common loop output for applying an analog detector signal to said loop output when any of said detectors are actuated;

identification means provided in each sensor loop with a separate identification means connected to each detector, for producing analog detector signals of different D.C. amplitudes for the detectors of each loop, each detection signal amplitude also being different than the sum of any combination of the other detection signal amplitudes produced by the other detectors of the loop;

signal processor means for processing the detector signals to determine which detector produced a given detector signal and to generator a corresponding output signal; and

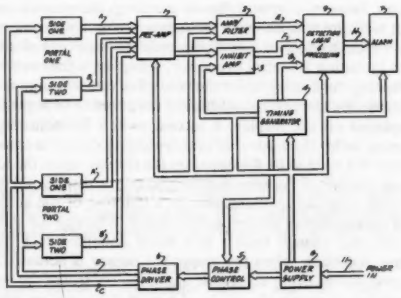
alarm means connected to the output of said signal processor means for indicating when said detectors are actuated.

4,524,350

DETECTION LOGIC AND SIGNAL PROCESSING METHOD AND APPARATUS FOR THEFT DETECTION SYSTEMS

Larry Eccleston, Concord, Mich., assignor to Progressive Dynamics, Inc., Marshall, Mich.

Filed Mar. 15, 1982, Ser. No. 358,383
Int. Cl.³ G08B *13/24*
U.S. Cl. 340—572 **56 Claims**



1. In a method of detecting the presence of a particular marker member within an electromagnetic interrogation field established between a pair of mutually spaced portal side members, wherein said electromagnetic field is made to alternate at one or more nominal frequencies and the field is monitored by at least first and second receiver means each disposed to access the field from a different side of said portal to detect the presence of signal indicia introduced by such a marker in response to its exposure to the alternations of the field, and wherein said receivers each produce an electrical signal representative of the frequency content of the alternating field at least in the area of proximity nearer to that receiver, the improvement for use in detecting said marker which comprises the steps of: producing a first composite electrical signal for marker-presence analysis by summing said electrical signals produced by said first and second receivers, to thereby increase detection sensitivity; producing a second composite electrical signal for use in marker-presence analysis by differencing said electrical signals produced by said first and second receivers, to reduce common-mode noise or other undesired signal characteristics in that composite electrical signal; comparatively examining representations of said first and second composite marker-presence signals with respect to one another to determine difference characteristics therebetween, and using such characteristics in said marker-presence determination.

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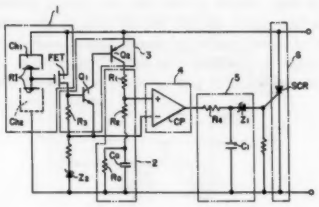
SMOKE DETECTOR

Tetsuo Kimura; Hirofumi Fujii; Hayami Yuasa, and Tatuo Yonezawa, all of Tokyo, Japan, assignors to Nittan Company, Limited, Tokyo, Japan

Filed Aug. 13, 1982, Ser. No. 408,050
Claims priority, application Japan, Aug. 20, 1981, 56-129350; Feb. 2, 1982, 57-14349
Int. Cl.³ G08B *17/10*
U.S. Cl. 340—629 **8 Claims**



1. A smoke detector comprising:

detection means for detecting smoke and providing a detection signal;

reference signal generating means actuated in reponse to said detection signal for producing a reference signal which varies with time, said reference signal generating means comprising first reference signal generating means for generating a first reference signal and second reference signal generating means for generating a second reference signal which is lower than said first reference signal;

comparison means for comparing said detection signal with said reference signal and producing a smoke implying output when said detection signal is lower than said reference signal, said comparison means comprising first comparison means for comparing said detection signal with said first reference signal and producing a first smoke implying output, and second comparison means for comparing said detection signal with said second reference signal and producing second smoke implying output; and

AND gate means receiving said first and second smoke implying outputs.

6. A smoke detector comprising:

detection means for detecting smoke and providing a detection signal;

reference signal generating means actuated in response to said detection signal for producing a reference signal which varies with time;

comparison means for comparing said detection signal with said reference signal and producing a smoke implying output when said detection signal is lower than said reference signal; and

an integration means connected to said comparison means for subjecting said smoke implying output to integration, said integration means providing a trigger signal when an integration value of said integration means reaches a predetermined value.

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HIGH FREQUENCY PILOT

James C. Greeson, Jr., Woodstock, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

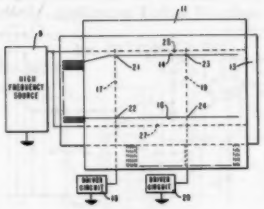
Filed Jun. 4, 1982, Ser. No. 385,183
Int. Cl.³ G09G *3/28*
U.S. Cl. 340—714 **8 Claims**

1. In a plasma display device comprising a plurality of display cells defined by the intersection of coordinate conductors disposed on opposite sides of a gas panel and means for discharging said display cells in response to the selective application of write signals thereto, said coordinate conductors having

a dielectric coating insulating them from contact with said gas, said dielectric coating comprising a layer of refractory material disposed thereover to eliminate aging of the surface of said dielectric by ion bombardment of said dielectric surface during discharge of said display cells, the improvement comprising

at lease one pilot cell,

said pilot cell comprising first and second electrodes connected to a high frequency drive source,



said pilot cell being positioned within the non-display area of said panel,

the light output of said high frequency pilot cell conditioning said display cells irrespective of their location in the panel immediately prior to said write signals being applied thereto.

4,524,353

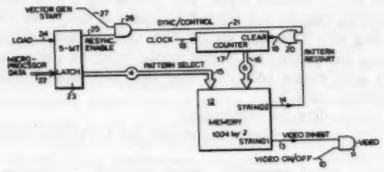
LINE PATTERN TEMPLATE GENERATOR

Karl L. Chase, Glendale, Ariz., assignor to Sperry Corporation, New York, N.Y.

Filed Mar. 29, 1982, Ser. No. 362,818

Int. Cl.³ G09G *1/08*

U.S. Cl. 340—732 **9 Claims**



1. Patterning apparatus for patterning solid lines generated by a vector generator, said vector generator having line generation control means for enabling the generation of said solid lines, said patterning apparatus patterning said lines into a plurality of predetermined and selectable patterns, said patterning apparatus comprising

addressable memory means for storing a plurality of strings of digits arranged in said plurality of predetermined patterns, respectively,

means for selecting one of said strings of digits, thereby selecting one of said predetermined patterns, and

means for serially applying the digits of said selected string to said line generation control means simultaneously with the generation of said solid lines by said vector generator for alternately enabling and disabling the generation of said solid lines in accordance with the digits of said selected string so as to pattern said solid lines in accordance with said selected pattern,

said memory further storing a further plurality of strings of digits associated respectively with said plurality of strings of digits storing said patterns, each string of said further plurality of strings comprising a string of digits including a stop bit thereby defining a stop bit string.

4,524,354

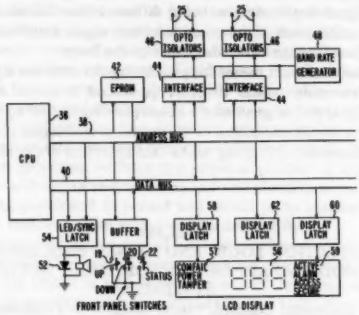
APPARATUS AND METHOD FOR MONITORING REMOTE SECURITY ZONES

Jack B. Morgan, 1657 Parkhills Ave., Los Altos, Calif. 94022

Filed May 10, 1982, Ser. No. 376,455

Int. Cl.³ H04Q *9/00*; G08B *29/00*

U.S. Cl. 340—825.36 **7 Claims**



1. A security system for a plurality of remote security zones spaced from a central control location comprising: a central control unit adapted to be placed at said central control location; and actuatable sensor adapted to be placed at each of said zones, respectively; and means coupling the central control unit with the sensors when the sensors are at respective zones, each zone having an identifying number, said central control unit including a central processor, a display, a first switch for actuating the display under the control of the central processor to cause the identifying numbers of the zones to be sequentially displayed on the display, a second switch for actuating the display under the control of said central processor to cause the status of a zone to be displayed on the display when the identifying number of the zone is displayed on the display, the status of each zone being changeable as a function of the actuation and deactuation of the respective sensor, whereby the status of a zone can change from a first status condition to a second status condition when the respective sensor is actuated, said second switch being actuatable under the control of the central processor to return the status of a zone displayed on said display to the first status condition when the status of the zone is in the second status condition when the sensor is deactuated after being actuated, said central processor being operable to display a symbol on the display representing an active actuation condition of a sensor when the sensor remains actuated after being actuated, the actuation of the second switch being operable to cause the central processor to display a third status condition of a zone before the status of the zone is returned to the first status condition if the sensor at the zone remains actuated after being actuated.

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ABNORMAL VIBRATION MONITOR

Ichiji Shima, No. 7, Kawahara Hiyou, Kamo-cho, Sagara-gun, Kyoto-fu, Japan; Shigeru Yoshibayashi, No. 1208-1, Ohaza-Tobi, Sakurai-shi, Nara-ken, Japan, and Ryosuke Taniguti, Nagasaki, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo; Ichiji Shima and Shigeru Yoshibayashi, both of Amagasaki, all of, Japan

Filed Jan. 15, 1980, Ser. No. 112,288

Claims priority, application Japan, Jan. 16, 1979, 54-3703

The portion of the term of this patent subsequent to Jun. 18, 1999, has been disclaimed.

Int. Cl.³ G08C *15/08, 19/00, 19/38*

U.S. Cl. 340—870.13 **5 Claims**

1. An abnormal vibration monitor for use in an explosive atmosphere comprising:

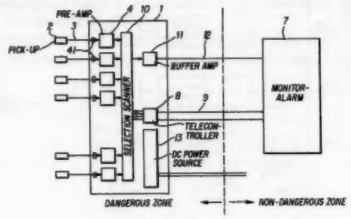
a plurality of piezo-acceleration pick-ups for detecting vibration in a plurality of parts to be monitored;

a plurality of pre-amplifiers having high impedance characteristics which are connected to said piezo-acceleration pick-ups;

a plurality of signal wires, each of which connects one of said piezo-acceleration pick-ups with one of said pre-amplifiers;

a selection scanner for receiving the outputs of said pre-amplifiers and selecting one thereof as an output;

a monitor for receiving the output from said selection scanner for transmitting a serial signal;



a single output cable for connecting said selection scanner and said monitor;

a telecontroller connected to said monitor and said selection scanner for receiving said serial signal from said monitor, and converting said serial signal into a parallel signal, whereby the selection scanner receives said parallel signal and selects one of the outputs of said pre-amplifiers in response thereto; and

an anti-explosion casing containing said pre-amplifiers, said selection scanner and said telecontroller so as to prevent an explosion.

4,524,356

OBSTACLE DETECTING DEVICE FOR VEHICLES

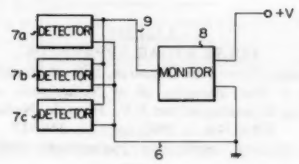
Masao Kodera; Shigeyuki Akita, and Yasuhisa Yoshino, all of Okazaki, Japan, assignors to Nippon Soken, Inc., Nishio, Japan

Filed Jul. 22, 1982, Ser. No. 401,023

Claims priority, application Japan, Jul. 27, 1981, 56-110231[U]

Int. Cl.³ G08G *1/00*

U.S. Cl. 340—904 **5 Claims**



1. A vehicular device for detecting obstacles, comprising:

a plurality of detection means, responsive to trigger signals, for transmitting respective signal waves, for receiving said signal waves as reflected by said obstacles and for producing respective output signals corresponding to respective distances of said detection means to said obstacles, each said obstacle detection means including a timing means for receiving said trigger signals and for enabling said signal wave transmission sequentially so as to produce said output signals sequentially;

monitor means, physically separated from said detection means, for monitoring said output signals, said monitor means including trigger signal generating means for generating said trigger signals, output signal receiving means for receiving said output signals and display means, having a plurality of display areas respectively corresponding to said plurality of obstacle detection means, for displaying respective distances from said obstacles to said respective detection means on their corresponding display areas in response to said output signals; and

a single transmission line which connects said plurality of detection means with said monitor means to permit transmission of said trigger signal from said trigger signal generating means to said timing means, and to permit transmission of said output signals from said detection means to said output signal receiving means by superimposing said trigger signal and said output signals on an electric voltage imposed by said monitor means on said transmission line.

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APPARATUS FOR VISUALLY INDICATING THE CURRENT LOCATION OF AN AUTOMOTIVE VEHICLE

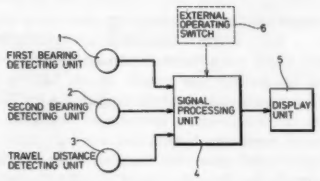
Yukinobu Nakamura; Katsutoshi Tagami, and Tsuneo Takahashi, all of Saitama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 16, 1982, Ser. No. 408,285

Claims priority, application Japan, Aug. 24, 1981, 56-132451

Int. Cl.³ G08G *1/12*

U.S. Cl. 340—995 **1 Claim**



1. A current location indicating apparatus for use in an automotive vehicle wherein a current location of said vehicle is arithmetically obtained in terms of two-dimensional coordinates by signal processing means on the basis of the outputs from travel distance detecting means and bearing detecting means, and said current location of said vehicle is visually indicated on the screen of display means from the thus-obtained data in connection with the current location of said vehicle, which comprises, in operative combination:

first bearing detecting means which comprises a rate type gyroscope as a primary unit;

second detecting means which comprises an earth magnetism sensor; and

wherein said signal processing means is adapted to continuously monitor the outputs from said first and second bearing detecting means in comparison with each other to deterine whether or not errors in the output of said rate type gyroscope have accumulated during bearing detecting operation due to possible drifts thereof during vehicle operation, whereby the output of said first bearing detecting means can be automatically immediately corrected while said vehicle is in motion.

4,524,358
PULSE RADAR APPARATUS

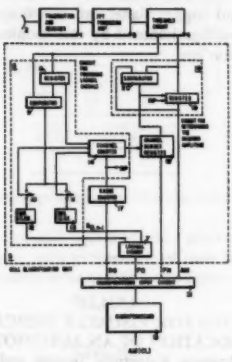
Jan Bergman; Pieter Van Genderen, both of Haaksbergen, and Willem A. Hol, Hengelo, all of Netherlands, assignors to Hollandse Signaalapparaten B.V., Hengelo, Netherlands

Filed Mar. 1, 1982, Ser. No. 353,693

Claims priority, application Netherlands, Mar. 9, 1981, 8101111

Int. Cl.³ G01S 13/52, 7/28

U.S. Cl. 343—7.7 2 Claims



1. In a pulse radar apparatus comprising a transmitter for transmitting radar pulses, a receiver for detecting, sampling and digitizing target returns for a plurality of range quants, an n-point FFT processing unit coupled to the receiver and having n output channels for producing respective output signals $A_0, A_1 \ldots A_{n-1}$ representing the target returns for n successive radar scans, and a threshold circuit coupled to said output channels for passing the output signals having magnitudes larger than predefined threshold magnitudes for the respective channels, the improvement comprising means for distinguishing between stationary targets and moving targets, including:

(a) a cell classification unit, coupled to the threshold circuit, for producing from the output signals passed a cell classification signal FQ having successive logical values preliminarily indicating whether target returns from respective radar cells represent moving or stationary targets, said cell classification unit comprising:

(1) circuitry for producing a signal $S_{0,1}$ indicating whether the output signal A_0 is larger or smaller than the output signal A_1,

(2) circuitry for producing a signal $S_{0,n-1}$ indicating whether the output signal A_0 is larger or smaller than the output signal A_{n-1}, and

(3) circuitry for producing the cell classification signal $FQ = S_{0,1} \cdot S_{0,n-1}$; and

(b) a processor means, coupled to the cell classification unit, for:

(1) associating adjacent radar cells, which collectively cover a target, to form a cell cluster,

(2) producing from the cell classification signals for said associated cells a cluster classification signal (CLUC) indicating whether the target covered by the cluster is moving or stationary, and

(3) responding to the cluster classification signal (CLUC) by producing a signal representative of the target covered by the cluster, if it is a moving target.

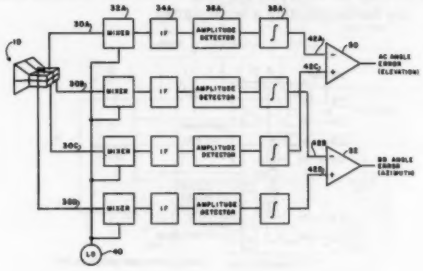
4,524,359
RADAR SYSTEM FOR REDUCING ANGLE TRACKING ERRORS

Edwin B. Champagne, Kettering, Ohio, assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Jul. 23, 1982, Ser. No. 401,164

Int. Cl.³ G01S 13/44

U.S. Cl. 343—16 M 3 Claims



1. A receiver for a tracking radar system operating in the microwave to millimeter wave region in a noncoherent mode, comprising:

antenna means including focusing means for focusing received radiation at a focal plane, an array of detector elements located at the focal plane, the array being divided into four quadrants with at least one detector element in each quadrant;

four receiving channels, each coupled via its individual feed means to a corresponding one of said quadrants, each channel including amplitude detection means, and providing an output signal proportional to the amplitude of the received radio frequency energy on its quadrant; wherein said amplitude detection means of each channel includes an amplitude detector which produces a train of pulses, and integrating means to integrate the train of pulses to form said output signal, such that no phase information is extracted from the received signals; and

comparison means coupled to the four receiving channels for comparing said output signals from diagonally opposite quadrants to produce error signals for use in driving the antenna means to move the focus of the received radio frequency energy toward the center of the array.

4,524,360
PULSE RADAR APPARATUS

Jan Bergman; Pieter Van Genderen, both of Haaksbergen, and Willem A. Hol, Hengelo, all of Netherlands, assignors to Hollandse Signaalapparaten B.V., Hengelo, Netherlands

Filed Feb. 2, 1982, Ser. No. 344,917

Claims priority, application Netherlands, Feb. 9, 1981, 8100606

Int. Cl.³ G01S 13/20, 7/28

U.S. Cl. 343—17.1 R 3 Claims

1. In a pulse radar apparatus comprising a transmitter for transmitting radar pulses, a receiver for detecting, sampling and digitizing target returns for a plurality of range quants, an n-point FFT processing unit coupled to the receiver and having n output channels for producing respective output signals $A_0, A_1 \ldots A_{n-1}$ representing the target returns for n successive radar scans, and a threshold circuit coupled to said output channels for passing the output signals having magnitudes larger than predefined threshold magnitudes for the respective channels, the improvement comprising means for distinguishing between first trip echoes and multiple trip echoes, including:

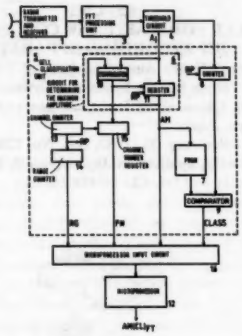
(a) a cell classification unit, coupled to the threshold circuit, for producing from the output signals passed a cell classification signal (CLASS) having successive logical values preliminarily indicating whether target returns from respective radar cells are first trip echoes or multiple trip echoes, said cell classification unit comprising:

(1) means for determining, for each cell, a value AM representing the maximum amplitude output signal for said cell,

(2) a pre-programmed memory for responding to each value AM by indicating, for the respective cell, a predefined number of output signals which are permitted to have amplitudes larger than their respective threshold magnitudes,

(3) a counter for determining for each cell the number of output signals having amplitudes larger than their respective threshold magnitudes, and

(4) a comparator for comparing, for each cell, said predefined number of output signals with the actual number of



output signals having amplitudes larger than their respective threshold magnitudes, said comparator effecting production of the cell classification signal (CLASS), said signal having a logical value representing a first trip echo only if the predefined number is equal to or larger than the actual number; and

(b) a processor means, coupled to the cell classification unit, for:

(1) associating adjacent radar cells, which collectively cover a target, to form a cell cluster,

(2) producing from the cell classification signals for said associated cells a cluster classification signal (CLUC) indicating whether the target returns for the cluster are first trip or multiple trip echoes, and

(3) responding to the cluster classification signal (CLUC) by producing a signal representative of the target covered by the cluster, if the target returns for the cluster are first trip echoes.

4,524,361

RADAR SYSTEMS EMPLOYING TWO KINDS OF PULSES

Wilhelmus A. Teulings, Haaksbergen, Netherlands, assignor to Hollandse Signaalapparaten B.V., Hengelo, Netherlands

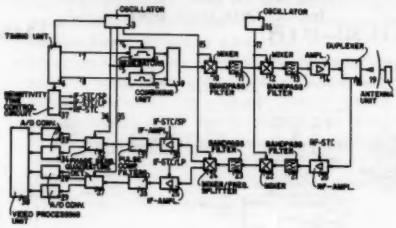
Filed Apr. 29, 1982, Ser. No. 372,884

Claims priority, application United Kingdom, May 5, 1981, 8113690

Int. Cl.³ G01S *13/28*

U.S. Cl. 343—17.2 PC **2 Claims**

1. In a radar system comprising a first generator for generating frequency-modulated transmitter pulses of relatively long duration; a second generator for generating transmitter pulses of relatively short duration; a transmitter channel coupled to said first and second generators for transmitting both the long and the short-duration transmitter pulses; and a receiver having a first receiving channel containing a pulse compression filter for the detection of return signals from the transmitter pulses of relatively long duration, and a second receiving channel for the detection of return signals from the transmitter pulses of relatively short duration the improvement wherein



the second generator comprises means for frequency-modulating the transmitter pulses of relatively short duration and the second receiving channel includes a pulse compression filter for compressing the return signals of the transmitter pulses of relatively short duration.

4,524,362

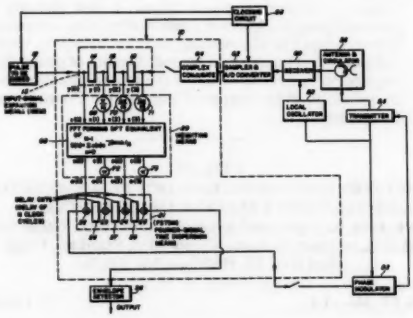
PHASE CODED PULSE EXPANDER-COMPRESSOR

Bernard L. Lewis, Fort Washington, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed May 11, 1982, Ser. No. 377,107

Int. Cl.³ G01S *13/28*; G06F *15/332*

U.S. Cl. 343—17.2 PC **7 Claims**



1. A digital pulse-expander-compressor comprising:

pulse coder means for providing a series of weighted pulses from a single input pulse, the time interval of the series being greater than that of the input pulse, the coder means including weighting means; and

pulse compression means of the matched-filter type for receiving and processing echo signals corresponding to the output signals of the coder means, the pulse compression means including weighting means which is the same weighting means as that employed in the coder means,

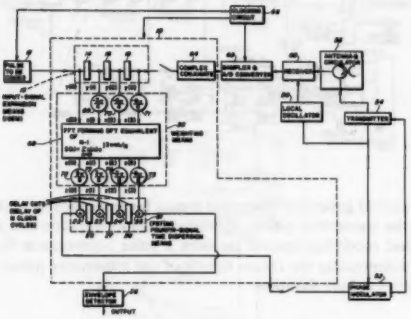
the improvement comprising said weighting means includes a discrete Fourier transform circuit; a plurality of phase-shifters, a respective phase-shifter being connected to every input of the discrete Fourier transform circuit except the first input; and a plurality of inverters, a respective inverter being connected to every other output of the discrete Fourier transform circuit.

4,524,363

P2 POLYPHASE CODE EXPANDER-COMPRESSOR

Frank F. Kretschmer, Laurel, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed May 11, 1982, Ser. No. 377,108
Int. Cl.³ G01S *13/28*; G06F *15/332*
U.S. Cl. 343—17.2 PC **7 Claims**



1. A digital pulse-expander-compressor comprising:

pulse coder means for providing a series of weighted pulses from a single input pulse, the time interval of the series being greater than that of the input pulse, the coder means including weighting means; and

pulse compression means of the matched-filter type for receiving and processing echo signals corresponding to the output signals of the coder means, the pulse compression means including weighting means which is the same weighting means as that employed in the coder means,

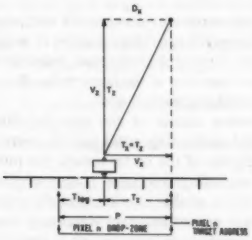
the improvement comprising said weighting means includes a discrete Fourier transform circuit; a first plurality of phase-shifters, a respective phase-shifter being connected to every input of the discrete Fourier transform circuit except the first input; and a second plurality of phase-shifters, a respective phase-shifter of the second plurality being connected to every output of the discrete Fourier transform circuit.

4,524,364

CIRCUITRY FOR CORRECTING DOT PLACEMENT FOR OSCILLATING CARRIAGE INK JET PRINTER

Lee L. Bain, Arlington, and Kenneth H. Fischbeck, Dallas, both of Tex., assignors to Xerox Corporation, Stamford, Conn.

Filed Nov. 22, 1982, Ser. No. 443,762
Int. Cl.³ G01D *15/16, 15/18*
U.S. Cl. 346—1.1 **11 Claims**



1. An ink jet printer timing circuit comprising:

counting means for determining a first number of clock pulses, each representing a unit of time, that occur between the beginning and end of the time required for the ink jet to travel each unit distance in relation to the position of the paper,

means for subtracting from said first number of clock pulses a second number of clock pulses representing the time required for an ink drop to travel from jet to paper, to produce a third number of clock pulses representing the delay required between the time that the ink jet is positioned at the start of said unit distance and the time that an ink drop should be ejected so that said ink drop will impact said paper at the time that said ink jet is at the end of said unit distance,

memory means for storing said third number, and

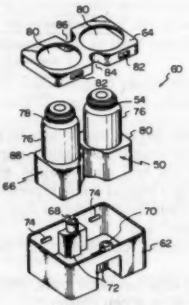
a timing means to convert said third number of clock pulses into a time delay, at the end of which an ink drop will be ejected, said delay being started at the time the ink jet is positioned at the start of said unit distance on the next print cycle.

4,524,365

RECEPTACLE FOR WASTE INK COLLECTION IN INK JET RECORDING APPARATUS

Sadao Kakeno; Minoru Ameyama, both of Yokohama; Kenichi Ichikawa, Tokyo; Michio Umezawa, Kawasaki, and Tomoyuki Yamaguchi, Chiba, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Aug. 31, 1983, Ser. No. 528,306
Claims priority, application Japan, Sep. 3, 1982, 57-154449
Int. Cl.³ G01D *15/16*
U.S. Cl. 346—75 **4 Claims**



1. An ink cartridge for an ink jet recording apparatus, comprising:

a cartridge casing for accommodating a fresh ink supply container and a waste ink collecting receptacle, said cartridge casing being formed with a plurality of guide holes and a plurality of fixing pawls; and

a unit for rigidly supporting the cartridge casing, said unit being provided with a plurality of guide pins each of which is formed with a recess, said cartridge casing being locked to said unit when leading ends of the fixing pawls are individually engaged in the recesses of the guide pins.

4,524,366

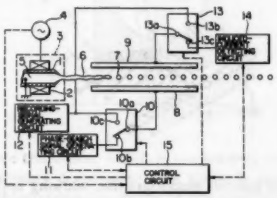
INK JET CHARGE PHASING APPARATUS

Takahiro Yamada, Ibaraki, Japan, assignor to Hitachi, Ltd. and Hitachi Koki Co., Ltd., both of Tokyo, Japan

Filed May 16, 1984, Ser. No. 610,800
Claims priority, application Japan, May 20, 1983, 58-87566
Int. Cl.³ G01D *18/00*
U.S. Cl. 346—75 **3 Claims**

1. An ink jet recording apparatus including means for ejecting ink to change the ejected ink into ink droplets, a charging electrode disposed in the vicinity of a region where the ejected ink is changed into ink droplets, recording-signal generating

means for applying a recording signal to said charging electrode to electrify an ink droplet, deflection means for deflecting said ink droplet in accordance with the electric charge thereof given by said recording signal, to deposit said ink droplet on a recording medium, phase-search-signal generating means for applying a phase search signal to said charging electrode to electrify an ink droplet, phase detecting means for searching the phase of production of said ink droplet electrified by said phase search signal, on the basis of the electric charge of said ink droplet, changeover means for selectively applying one of said recording signal and said phase search signal to said charging electrode, and a control circuit for synthetically



controlling said ink ejecting means, said recording-signal generating means, said deflection means, said phase-search-signal generating means, said phase detecting means, and said changeover means, wherein said charging electrode includes a pair of independent electrode plates disposed so that said electrode plates face each other and the flying path of ink droplets is interposed between said electrode plates, and said changeover means includes an electric circuit for connecting said phase-search-signal generating means and said phase detecting means to one and the other of said electrode plates, respectively, at a phase search period, to apply said phase search signal to one of said electrode plate and detect a current appearing on the other electrode plate.

4,524,367

THERMAL PRINTER

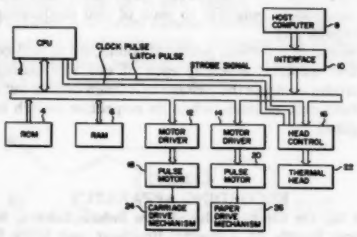
Keiichi Horiya, Numazu, and Naoki Miyazaki, Shizuoka, both of Japan, assignors to Tokyo Electric Co., Ltd., Tokyo, Japan

Filed Dec. 7, 1983, Ser. No. 558,942

Claims priority, application Japan, Dec. 23, 1982, 57-231507; Dec. 23, 1982, 57-231508

Int. Cl.³ G06F *15/70*

U.S. Cl. 346—76 PH **10 Claims**



1. A thermal printer comprising

data generation means for generating character specifying data to designate a character to be printed and a size data representative of the size of the picture element of the character;

a thermal head having a plurality of heating elements arranged in a line;

head drive means for driving said thermal head in the printing direction at a speed determined by a drive signal;

head control means for selectively supplying currents to said plurality of heating elements in accordance with a dot pattern data;

memory means having a first memory area storing a plurality of character data which are each constituted by m dot pattern data each having n bits; and

print control means for receiving the character data designated by said character specifying data from said memory means, converting the n-bit dot pattern data of the received character data into dot pattern data of the number of bits designated by said size data, supplying the converted dot pattern data to said head control means and supplying the drive signal corresponding to said size data to said head drive means.

4,524,368

THERMAL HEAD DRIVE CIRCUIT

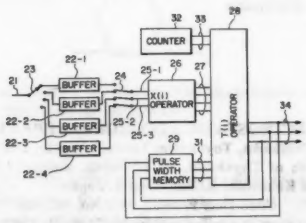
Toshiharu Inui, and Haruhiko Moriguchi, both of Kanagawa, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Mar. 30, 1984, Ser. No. 595,338

Claims priority, application Japan, Apr. 1, 1983, 58-55265

Int. Cl.³ G01D *15/10*

U.S. Cl. 346—76 PH **10 Claims**



1. A thermal head drive circuit with the input connected to a source of printing data, and the output connected to a thermal head including individually actuatable and heatable heater elements, for printing successive lines comprising:

a. a pulse-applying circuit connected to the input of said thermal head for receiving pulse energy signals and applying printing pulse energy data to said thermal head;

b. storage means into which printing data from said printing data source are successively read line by line;

c. a heat storage state operator connected to the output of said storage means;

d. a counter connected to the output of said storage means for counting the number of dots in the line next to be printed;

e. a memory for storing the pulse energy signals used in printing a line immediately previous to said next to be printed line; and

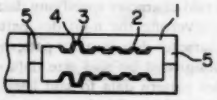
f. pulse energy operator means for computing the pulse energy signals to be applied to each of said heater elements, the inputs of said pulse energy operator means being connected to the outputs of said heat storage state operator, said memory and said counter, and the output of said pulse energy operator means being connected to the input of said pulse-applying circuit.

4,524,369

PLASTIC INFORMATION-RECORDING MEDIUM

Masaaki Sato; Aizo Kaneda, and Makio Watanabe, all of Yokohama, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jun. 23, 1982, Ser. No. 391,374
Claims priority, application Japan, Aug. 21, 1981, 56-130235
Int. Cl.³ G01D *15/34*
U.S. Cl. 346—135.1 9 Claims



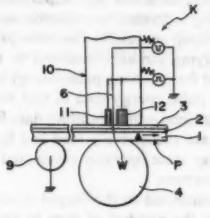
1. A plastic information-recording medium comprising a pair of juxtaposed transparent plastic substrates having a clearance between the substrates, the clearance being gas-tightly blocked from an outside atmosphere by joining the substrates together at peripheral edges thereof, and a recording film being provided on each of clearance-facing sides of the substrates, the substrates being made from: (1) a composition comprising a copolymer consisting of 5 to 25% by weight of acrylonitrile or methacrylonitrile and 95 to 75% by weight of at least one monomer copolymerizable with acrylonitrile or methacrylonitrile, said at least one monomer being a monomer other than styrene or a styrene derivative, or (2) a composition comprising at least 70% by weight of said copolymer and at most 30% by weight of butadiene rubber, whereby use of 5 to 25% by weight of acrylonitrile or methacrylonitrile in said copolymer is effective for preventing cracking of said recording film while also preventing curving of the substrate due to moisture absorption.

4,524,370

ELECTROSTATIC RECORDING APPARATUS

Nobuaki Nishioka, Toyokawa; Tatsumi Makio, and Katsutsune Ito, both of Toyohashi, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Dec. 9, 1982, Ser. No. 448,506
Claims priority, application Japan, Dec. 21, 1981, 56-206579
Int. Cl.³ G01D *15/06*
U.S. Cl. 346—155 5 Claims



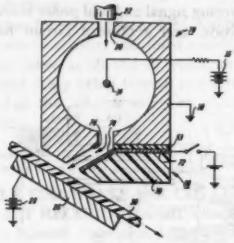
4. In an electrostatic recording apparatus which comprises a plurality of electrodes arranged at right angles to a transport direction of an electrostatic recording paper, a plurality of first and second controlling electrodes disposed parallel to and having said recording interposed therebetween, said first controlling electrodes being disposed at the upstream side of said recording electrodes and having a width facing the recording paper smaller than the width of said second controlling electrodes disposed at the downstream side of said recording electrodes.

4,524,371

MODULATION STRUCTURE FOR FLUID JET ASSISTED ION PROJECTION PRINTING APPARATUS

Nicholas K. Sheridon, Saratoga, and Michael A. Berkovitz, Woodside, both of Calif., assignors to Xerox Corporation, Stamford, Conn.

Filed Apr. 1, 1983, Ser. No. 481,132
Int. Cl.³ G01D *15/06*
U.S. Cl. 346—159 5 Claims



1. A fluid jet assisted electrographic marking apparatus for placing electrostatic charges upon a charge receptor in an image-wise pattern, said apparatus being characterized by including

housing means including an upstream, ion generation region and a downstream, ion modulation region,

means for supplying a transport fluid to said housing,

means for delivering the transport fluid to said housing at a location upstream of said ion generation region for entraining ions in the fluid path and moving them with fluid,

a channel in said housing for receiving the transport fluid from said ion generation region and for directing the transport fluid and entrained ions through said ion modulation region, said channel defining a bent path and being of a width such that laminar flow of the transport fluid will prevail therethrough, and

ion modulation means, located at said ion modulation region, including

an array of electrically conductive modulating electrodes located on one side of said channel, at a position downstream of its bend, and disposed upon a substantially planar substrate, said electrodes including a first portion extending in the plane of said substrate and a second portion departing from the plane of said substrate by an angle of less than 45°,

a conductive member on the side of said channel opposite to said modulating electrodes,

a source of modulating potential,

switch means for selectively connecting said source of modulating potential to each of said modulating electrodes, and

a source of reference potenital connected to said conductive member, whereby each of said modulating electrodes controls the passage of a beam of ions out of said bent path channel, when its respective switch is energized.

4,524,372

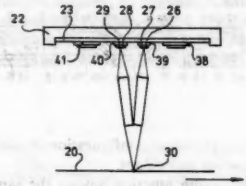
RECORDING APPARATUS

Etienne M. De Cock; Lucien A. De Schamphelaere, both of Edegem; Freddy M. Librecht, Boechout, and Willy F. Van Peteghem, Berchem, all of Belgium, assignors to AGFA-Gevaert N.V., Mortsel, Belgium

Filed Jan. 10, 1984, Ser. No. 569,662
Claims priority, application European Pat. Off., Jan. 21, 1983, 83200091.3
Int. Cl.³ G01D *15/14*; G02F *1/01*; H04N *1/22, 3/14*
U.S. Cl. 346—160 17 Claims

1. Apparatus for the line-wise transmission of information

comprising a series of microelectronic transducers formed on chips and distributed along an elongate zone for transducing input signals representing increments of a line of information, characterised in that in addition to said series of transducers (hereafter called "primary transducers") there is at least one group of transducers (hereafter called "secondary transducers") which are individually aligned in a direction transverse to the length of said elongate zone with individual primary transducers; that at least one of said secondary transducers is a



non-defective transducer which is transversely aligned with a defective primary transducer; that there is optical transfer means for transferring the image of any defective transducer and the image of the corresponding (i.e. transversely aligned) non-defective transducer onto a common transverse line, and that there is connection means for electrically connecting a secondary transducer in the apparatus so that it is effective in lieu of or in addition to the corresponding defective primary transducer.

4,524,373

FLUORAN DERIVATIVES AS NEW COMPOUNDS, PROCESS FOR PREPARING THE SAME AND RECORDING SYSTEM UTILIZING THE SAME AS COLORLESS CHROMOGENIC MATERIAL

Mitsuru Kondo, Hyogo; Hiroshi Iwasaki, Kawanishi; Nobuo Kanda, Osaka; Masayuki Omatsu, and Haruo Omura, both of Motomachi, all of Japan, assignors to Kanzaki Paper Manufacturing Co., Ltd., Tokyo, Japan

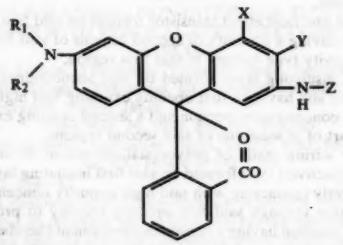
Filed Feb. 17, 1983, Ser. No. 467,286

Claims priority, application Japan, Feb. 24, 1982, 57-30058; Feb. 26, 1982, 57-31465; Feb. 27, 1982, 57-31543; Apr. 16, 1982, 57-64231; Apr. 21, 1982, 57-67632; May 6, 1982, 57-76972; Oct. 8, 1982, 57-178144

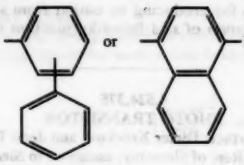
Int. Cl.³ B41M *5/18*; S41M *5/22*

U.S. Cl. 346—221 **3 Claims**

1. A recording system which utilizes the color forming reaction between a colorless chromogenic material an electron accepting acidic reactant material, characterized in that said colorless chromogenic material comprises at least one fluoran derivative having the general formula:



wherein Z is $-CH_2COOCH_2CH=CH_2$,

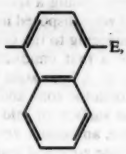


wherein E is hydrogen or

wherein each R_3 and R_4 is hydrogen, an alkyl having 1 to 4 carbon atoms or phenyl;

each R_1 and R_2 is an alkyl having 1 to 12 carbon atoms or an aralkyl having 7 to 9 carbon atoms; X is hydrogen, halogen atom, an alkyl having 1 to 4 carbon atoms or an alkoxyl having 1 to 2 carbon atoms; and Y is hydrogen, halogen atom or an alkyl having 1 to 4 carbon atoms; however,

when Z is



at least one of X and Y is selected from the before-mentioned substituents other than hydrogen.

4,524,374

DEVICE FOR DETECTING INFRARED RAYS

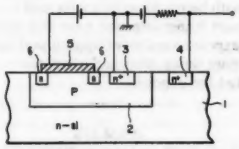
Masahiko Denda, and Natsuro Tsubouchi, both of Hyogo, Japan, assignors to Mitsubishi Denki K.K., Tokyo, Japan

Filed Jul. 20, 1981, Ser. No. 285,243

Claims priority, application Japan, Jul. 22, 1980, 55-100929

Int. Cl.³ H01L *27/14*

U.S. Cl. 357—15 **5 Claims**



1. A device for detecting infrared rays comprising:

a first conductivity type semiconductor substrate;

a first region of a second conductivity type formed on said substrate;

a metal material formed on said first region to form a Schottky junction between said metal material and said first region;

a second region of said first conductivity type formed on said first region to form a P-N junction between said first and second regions;

bias means for reverse biasing said Schottky junction and

thereby forward biasing said P-N junction upon infrared irradiation of said Schottky junction; and

output means for producing an output from said substrate upon irradiation of said Schottky junction with infrared rays.

4,524,375

PHOTO TRANSISTOR

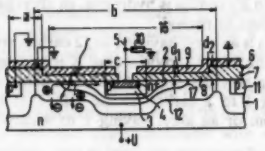
Werner Baumgartner; Dieter Krockow, and Jenö Tihanyi, all of Munich, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Continuation of Ser. No. 315,293, Oct. 27, 1981, abandoned. This application Apr. 10, 1984, Ser. No. 598,355

Claims priority, application Fed. Rep. of Germany, Nov. 25, 1980, 3044341

Int. Cl.³ H01L *27/14, 31/00, 29/72, 29/04*

U.S. Cl. 357—30 **4 Claims**



1. Photo transistor, comprising a semiconductor body having a surface, a collector zone disposed in said body and having at least a part thereof emerging to the surface of said body, the collector zone being of a first conductivity type and being connectable to a potential, a base zone being embedded in a planar manner in said collector zone and having at least a part thereof emerging to the surface of said body and being of a second conductivity type, an emitter zone being embedded in a planar manner in said base zone and being of the first conductivity type, an emitter electrode disposed on said emitter zone, a region disposed on the surface of said body being intended for exposure having an edge and a remainder of said region, the region comprising the emitter zone, said part of the base zone emerging to the surface of said body and a part of the collector zone, an insulating layer covering said surface, an auxiliary zone being embedded in the surface of said body and having the second conductivity type and being connectable to a potential, an auxiliary electrode being connectable to a potential and being transparent to light and being disposed on said insulating layer and overlapping at least said part of said base zone emerging to the surface and said auxiliary zone and covering said part of said collector zone emerging to the surface, said insulating layer having a relatively thicker part and a relatively thinner part both being disposed under said auxiliary electrode, said thicker part being disposed over the edge of said region intended for exposure and overlapping said auxiliary zone and said thinner part being disposed over the remainder of said region intended for exposure.

4,524,376

CORRUGATED SEMICONDUCTOR DEVICE

John A. Cornick, Manchester, England, assignor to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 286,911, Jul. 27, 1981,. This application May 14, 1984, Ser. No. 610,917

Claims priority, application United Kingdom, Aug. 20, 1980, 8027063

Int. Cl.³ H01L *29/06*

U.S. Cl. 357—55 **28 Claims**

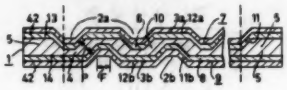
1. A semiconductor device comprising

a semiconductor body having two major surfaces,

a first of said two major surfaces having a first plurality of grooves and ridges, and a second of said two major surfaces having a second plurality of grooves and ridges, said second plurality of grooves and ridges being offset to said first plurality of grooves and ridges, and said second plurality of grooves and ridges being opposite to said first plurality of ridges and grooves respectively,

a first region of one conductivity type adjoining said first of said two major surfaces, and said first region having the same configuration as said first plurality of grooves and ridges,

a second region of an opposite conductivity type adjoining said second of said two major surfaces, and said second



region having the same configuration as said second plurality of grooves and ridges,

at least one rectifying junction having the same configuration as and extending parallel to said first major surface below said first region,

an electrode covering each of said two major surfaces,

wherein said semiconductor body has a thickness perpendicular to said two major surfaces with said thickness being uniform between said grooves and ridges of said first of said two major surfaces and said ridges and grooves respectively of said second of said two major surfaces.

4,524,377

INTEGRATED CIRCUIT

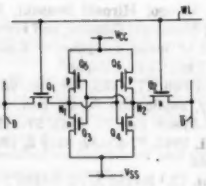
Hirotugu Eguchi, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Continuation of Ser. No. 265,003, May 20, 1981,. This application Feb. 14, 1984, Ser. No. 579,283

Claims priority, application Japan, May 15, 1981, 55-64752

Int. Cl.³ H01L *29/90, 29/04, 27/02, 23/48*

U.S. Cl. 357—59 **13 Claims**



1. An integrated circuit, comprising:

a semiconductor substrate of a first conductivity,

a first region of a second conductivity type formed in said semiconductor substrate and having a high impurity concentration portion of said second conductivity type therein,

at least one field effect transistor formed on said first region and having a plurality of second regions of said first conductivity type formed in said first region,

a first insulating layer formed on said semiconductor substrate and having a first opening exposing said high impurity concentration portion and a second opening exposing a part of at least one of said second regions,

a first wiring made of polycrystalline silicon of said first conductivity type formed on said first insulating layer and directly contacting with said high impurity concentration portion through said first opening thereby to provide a PN junction having a resistance component therebetween, and with said part of said at least one of said second regions through said second opening, and

means for supplying said first wiring with a predetermined voltage, in which said first region is continuously biased at said predetermined voltage through said resistance component of said PN junction.

4,524,378

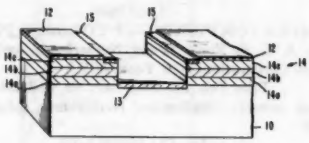
ANODIZABLE METALLIC CONTACTS TO MERCURY CADMIUM TELLERIDE

Charles A. Cockrum, Goleta; Joan K. Chia, and James F. Kreider, both of Santa Barbara, all of Calif., assignors to Hughes Aircraft Company, El Segundo, Calif.

Continuation of Ser. No. 174,963, Aug. 4, 1980, abandoned. This application Jul. 21, 1983, Ser. No. 516,416

Int. Cl.³ H01L *23/48, 21/306*

U.S. Cl. 357—71 **14 Claims**



1. A semiconductor device comprising a compound semiconductor material consisting essentially of (Hg,Cd)Te, a metallic contact attached thereto, a uniform passivating native semiconductor oxide layer adjacent said metallic contact and a surface of said compound semiconductor material, the otherwise exposed surface of said semiconductor material being anodically oxidizable to form said passivating native semiconductor oxide layer thereon, said metallic contact comprising a plurality of metal layers including:

(a) a contact metal layer formed on a surface portion of said semiconductor material, said contact metal layer forming a substantially non-rectifying contact with said semiconductor material and providing a diffusion barrier and comprising a metal selected from the group consisting of titanium, chromium, nickel and palladium;

(b) a top metal layer formed so as to overlie said metal layers, the exposed surface portion of said top metal layer being anodically oxidizable to form a metal oxide thereon and thereby prevent any significant interference by said metal layers with the substantially uniform formation of said passivating native semiconductor oxide, said top metal layer being selected from the group consisting of metals occupying a position between hydrogen and magnesium in the Electromotive Series; and

(c) an oxide layer formed on said top metal layer, the thickness of said oxide layer being sufficient to substantially prevent any interference by said metallic contact with the anodic oxidation of said compound semiconductor material at any time subsequent to the formation of said oxide layer.

4,524,379

DOUBLE-SCANNING NON-INTERLACE TELEVISION RECEIVER WITH VERTICAL APERTURE CORRECTION CIRCUIT

Takashi Okada, Yokohama; Yasunari Ikeda, Funabashi, and Yutaka Tanaka, Yokohama, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Nov. 30, 1982, Ser. No. 445,465

Claims priority, application Japan, Dec. 3, 1981, 56-195427

Int. Cl.³ H04N *9/535, 5/14*

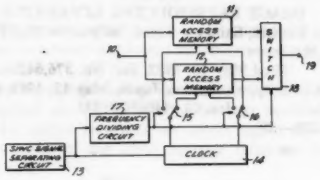
U.S. Cl. 358—11 **23 Claims**

1. A double-scanning non-interlace television receiver for receiving an interlace television signal having alternating odd and even fields of scanned lines which are normally interlaced, as displayed, comprising:

receiver means for receiving said interlace television signal and generating interlace scanning line signals from each said field;

visual display means;

non-interlace converting means for converting said interlace scanning line signals for each of said fields to non-interlace



scanning line signals which are displayed on said visual display means, with each of said scanned lines being scanned twice; and

emphasizing means for emphasizing the high frequency components of said non-interlace scanning line signals.

4,524,380

CHROMA SIGNAL RECORDING AND REPRODUCING CIRCUIT

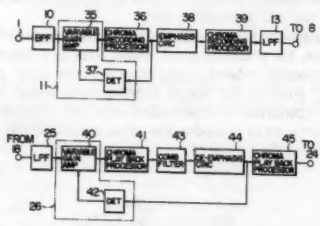
Akira Shibata; Keiichi Komatsu; Tomomitsu Kuroyanagi, all of Katsuta, and Noboru Kojima, Yokohama, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Dec. 7, 1982, Ser. No. 447,387

Claims priority, application Japan, Dec. 7, 1981, 56-195687; Feb. 17, 1982, 57-22703; May 17, 1982, 57-81402; Sep. 1, 1982, 57-150763

Int. Cl.³ H04N *9/491*

U.S. Cl. 358—316 **31 Claims**



1. A chroma signal recording and reproducing circuit in a magnetic recording and reproducing apparatus for frequency-modulating a luminance signal of a color video signal, low-frequency converting a chroma signal of said video signal, frequency-multiplexing at least the frequency-modulated luminance signal and the low-frequency converted chroma signal, recording the frequency-multiplexed luminance and chroma signals by a recording magnetic head on a magnetic recording medium and reproducing the frequency-multiplexed luminance and chroma signals by a reproducing magnetic head from said magnetic recording medium, said chroma signal recording and reproducing circuit comprising:

chroma signal recording means coupled for connection to said recording magnetic head including at least a first ACC circuit and a first frequency converter connected in series with said first ACC circuit for low-frequency converting the chroma signal; and

chroma signal reproducing means coupled for connection to said reproducing magnetic head including a second ACC circuit, and a second frequency converter connected in series with said second ACC circuit for frequency-converting the low-frequency converted chroma signal, a first comb filter connected to an output of the series connection of said second ACC circuit and second frequency

converter, and a dynamic deemphasis circuit connected to an output of said first comb filter for dynamically deemphasizing an output signal of said first comb filter in response to the level of said output signal.

4,524,381

IMAGE REPRODUCING APPARATUS

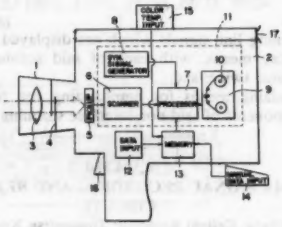
Masahiro Konishi, Saitama, Japan, assignor to Fuji Photo Film Co., Ltd., Japan

Filed May 10, 1982, Ser. No. 376,642

Claims priority, application Japan, May 12, 1981, 56-71145

Int. Cl.³ H04N 9/535

U.S. Cl. 358—29 **22 Claims**



1. An image reproducing apparatus adapted for use with an electronic camera which producess image data and image reproduction signal processing data functionally related to such image data, which apparatus comprises:

(a) first means for storing the image data and its functionally related image reproduction signal processing data on the same recording medium, and for providing at an output the image data and its functionally related image reproduction signal processing data by retrieving the same from said recording medium; and

(b) processing means, connected to said output of said first means, for processing the image data as a function of its functionally related image reproduction signal processing data, wherein the image reproduction signal processing data comprises compensation data for compensating for deficiencies in reproduction of an image photographed by the electronic camera.

4,524,382

FILTER CIRCUITS

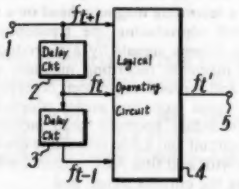
Yutaka Tanaka, and Takashi Okada, both of Yokohama, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Jul. 8, 1982, Ser. No. 396,396

Claims priority, application Japan, Jul. 13, 1981, 56-109101

Int. Cl.³ H04N 9/535

U.S. Cl. 358—31 **18 Claims**



1. A filter circuit for eliminating noise from an input signal of known frequency content comprising:

signal separating means receiving an input signal to be filtered including at least a first delay circuit for delaying said input signal by an amount equivalent to a period of the maximum frequency of said input signal to produce a first delay signal and a second delay circuit for delaying said first delay signal by an amount equivalent to a period of the maximum frequency of said input signal to produce a second delay signal, such that said input signal, said first delay signal, and said second delay signal represent adjacent ones of plural separated signals spaced apart from each other at predetermined different time points; and

logical operating means having at least three input terminals each being supplied with a corresponding one of said plural separated signals from said signal separating means and including means for detecting a level of said input signal at said different time points for producing a filtered output signal having a desired waveform by processing said adjacent ones of said plural level detected separated signals based on a predetermined logical formula.

4,524,383

CAMERA FOR PICKING-UP COLORED PICTURES

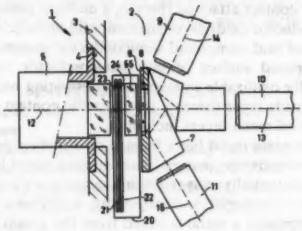
Jacobus A. G. de Rooij, Breda, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Feb. 22, 1983, Ser. No. 468,234

Claims priority, application Netherlands, Mar. 22, 1982, 8201168

Int. Cl.³ H04N 9/09

U.S. Cl. 358—55 **20 Claims**



1. A color camera comprising:

a housing;

an optical input system arranged in the housing on an optical axis;

an optical distribution system arranged in the housing on the optical axis to receive light from the optical input system;

a filter wheel arranged in the housing between the optical input system and the optical distribution system, said filter wheel having a number of filter elements which can be moved onto the optical axis between the optical input system and the optical distribution system by rotating the filter wheel; and

a number of pickup tubes arranged in the housing to receive light from the optical distribution system;

characterized in that:

the filter wheel is arranged in a cassette in the housing; and

the cassette comprises an electric motor for rotating the filter wheel.

4,524,384

VIDEO AND AUDIO SECURITY SYSTEM

Stephen Lefkowitz, Englewood Cliffs; Salvatore Benenati, Red Bank, both of N.J., and Edward S. Ickowski, Brooklyn, N.Y., assignors to GBC Closed Circuit TV Corp., New York, N.Y.

Filed Apr. 21, 1983, Ser. No. 487,135

Int. Cl.³ H04N 7/18

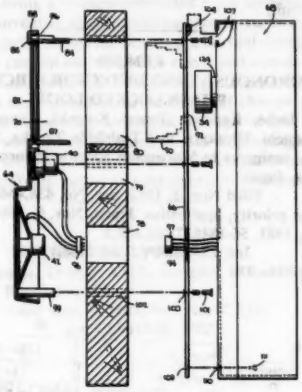
U.S. Cl. 358—108 **21 Claims**

18. A video assembly, for a video monitoring system, adapted to be mounted to a thin-walled structure such as a door, comprising:

a video camera including an optical system having a lens;

a first plate-like element adapted to be mounted to a side of said structure and having an exterior side and an interior side which faces said structure when said first plate-like element is mounted thereto, said first plate-like element having a first light-transmitting aperture;

a subassembly to which said video camera is mounted, said subassembly including means for mounting it to one side of said structure with said lens extending into an opening in said structure to receive images present on an opposite



side of said structure, said subassembly having an interior side which faces said structure when said subassembly is mounted thereto, and a second light-transmitting aperture; and

sleeve means extending through said mounting means between said first and second aperture when said video camera is mounted to said subassembly and said subassembly is mounted to said structure, wherein said lens extends through said second aperture into said sleeve.

4,524,385

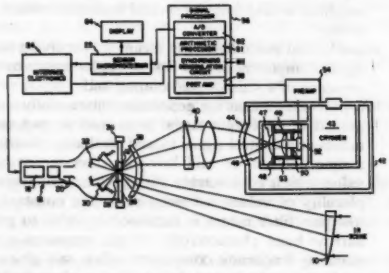
PREDETECTION PROCESSING OF OPTICAL INFORMATION

James D. Billingsley, and Fergus E. Moore, both of Arlington, Tex., assignors to LTV Aerospace and Defense Company, Dallas, Tex.

Continuation-in-part of Ser. No. 279,171, Jun. 30, 1981, abandoned. This application Aug. 31, 1983, Ser. No. 528,222

Int. Cl.³ H04N *1/18*

U.S. Cl. 358—113 **52 Claims**



1. An optical data processor for preprocessing optical information from a scene being viewed by a sensor comprising:

a thermoptic modulator positioned in the image plane of the sensor, said modulator having an optical structure disposed at the faceplate thereof, said optical structure being substantially nonreflecting of optical energy, but capable of having reflecting spots written at selected coordinates thereon for reflecting optical energy incident at said spots, said modulator including writing means capable of selectively writing spots at any location on said optical structure;

control means connected to said writing means for causing a spot to be written at selected coordinates on said modulator; and

detector means positioned to view said modulator for detecting optical energy reflected from said modulator, said detector means providing an output signal representing the radiance of the scene element reflected from said modulator.

4,524,386

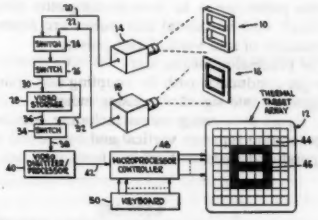
THERMAL TARGET DISPLAY SYSTEM

Edward A. Scott, Laurel, Md., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Apr. 12, 1982, Ser. No. 367,306

Int. Cl.³ H04M *5/16*

U.S. Cl. 358—113 **9 Claims**



1. A thermal target display system for generating simulated thermal radiation patterns of selected real-scene objects, said system comprising:

means for providing a video-compatible output signal representative of the thermal radiation image of said object;

video signal processor means for digitizing and enhancing said video compatible signal, said video signal processor means generating output signals for a plurality of pixel elements defining a video frame;

a thermal display screen having an array of individually controllable thermal radiating elements; and

control means for selectively energizing individual ones of said array of thermal radiating elements in response to said output signals from said video signal processor means to generate a thermal radiation pattern on said display screen corresponding to said video frame, said control means including

a converter for converting said output signals from said video processor means into respective temperature reference signals for said thermal radiating elements in said array,

first temperature sensing means for sensing the temperature of each thermal radiating element to generate actual temperature signals corresponding respectively to the actual temperatures of said thermal radiating elements, and

a comparator for comparing the temperature reference signal and the actual temperature signal for each thermal radiating element to provide an energizing output signal for each thermal radiating element until the actual temperature signal corresponds with the reference temperature signal.

4,524,387

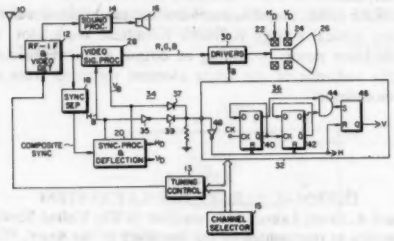
SYNCHRONIZATION INPUT FOR TELEVISION RECEIVER ON-SCREEN ALPHANUMERIC DISPLAY

Gregory G. Tamer, Indianapolis, Ind., assignor to RCA Corporation, New York, N.Y.

Filed Mar. 30, 1983, Ser. No. 480,508

Int. Cl.³ H04N *5/10, 5/06, 5/50*

U.S. Cl. 358—154 **10 Claims**



9. In a display system requiring vertical and horizontal synchronization, apparatus comprising:

means for developing separate vertical and horizontal rate pulses;

combining means for combining said vertical and horizontal rate pulses so as to form a composite timing signal in which said horizontal rate pulses are absent during the duration of said vertical rate pulses;

signal processing means; and

a single conduction path for coupling said composite timing signal to said signal processing means;

said signal processing means including decoder means for generating separate vertical and horizontal signals corresponding to said vertical and horizontal rate pulses.

4,524,388

SHADING CORRECTION DEVICE

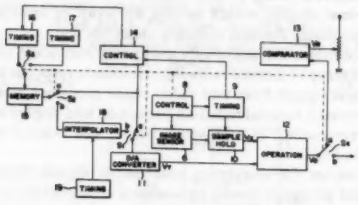
Yoshinori Abe, and Masahiko Matsunawa, both of Tokyo, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed Aug. 6, 1982, Ser. No. 406,078

Claims priority, application Japan, Aug. 11, 1981, 56-124791; Jun. 22, 1982, 57-107040; Jun. 22, 1982, 57-107041

Int. Cl.³ H04N *5/34*

U.S. Cl. 358—163 **5 Claims**



1. A shading correction device comprising: a reflecting portion having a uniform reflection factor distribution; a photoelectric conversion means for converting the light reflected by said reflecting surface into an electric signal; an operation means for calculating shading correction coefficients at a predetermined sampling timing from said electric signal derived from said photoelectric conversion means; a memory means for storing the shading correction coefficients calculated by said operation means; an interpolator means adapted to perform, using said shading correction coefficients read from said memory means, a calculation for determining the shading correction coefficient corresponding to a predetermined portion of said reflecting portion by an interpolator and to hold the calculated coefficient; a correcting means for effecting a shading correction of the picture signal representing the document information to be recorded by means of shading correction coefficients read out of said interpolator; and means operable while the correction is made by said shading correcting means derived from said interpolator, to cause the shading interpolator coefficients for the next sampling to be read out of said memory means and to cause the shading correction coefficients for non-sampling period to be calculated by said interpolator circuit.

4,524,389

SYNCHRONOUS VIDEO DETECTOR CIRCUIT USING PHASE-LOCKED LOOP

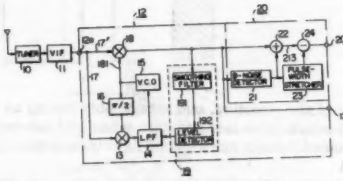
Mitsuo Isobe, Kadoma; Tetsuo Kutsuki, Toyonaka; Namio Yamaguchi, Hirakata, and Toshihide Tanaka, Ikoma, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Nov. 2, 1982, Ser. No. 438,466

Claims priority, application Japan, Nov. 9, 1981, 56-179469; Nov. 17, 1981, 56-184617

Int. Cl.³ H04N *5/44;* **H04B** *1/68*

U.S. Cl. 358—188 **15 Claims**



1. A synchronous video detector circuit using a phase-locked loop comprising:

voltage-controlled oscillator means for receiving an intermediate frequency output signal from a video IF amplifier and for generating first and second oscillation output signals having a phase difference of approximately $\pi/2$ (rad) relative to each other;

first multiplier means for receiving said intermediate frequency output signal amplified to a given amplitude level by said video IF amplifier and said first oscillation output signal;

second multiplier means for receiving said intermediate frequency output signal amplified to a given amplitude by said video IF amplifier and said second oscillation output signal;

coupling means of a type substantially untuned for supplying said intermediate frequency output signal of said video IF amplifier to said first and second multiplier means, respectively;

phase-locked mode detecting means for receiving an output signal component of said first multipler means to detect a presence of a video signal output; and

low-pass filter means for generating substantially a dc component of an output signal from said second multiplier means as a control signal to said oscillator means, at least a time constant of said low-pass filter means having a value which is selectably changeable with respect to a plurality of values, whereby said time constant of said low-pass filter means is increased in value to provide a narrow band characteristic which attenuates a vertical scanning frequency component when said phase-locked mode detecting means detects that a phase-locked loop including said voltage-controlled oscillator means, said second multiplier means and said low-pass filter means is in a phase-locked mode of operation and said time constant is decreased in value to provide a wider band characteristic than said narrow band characteristic when said

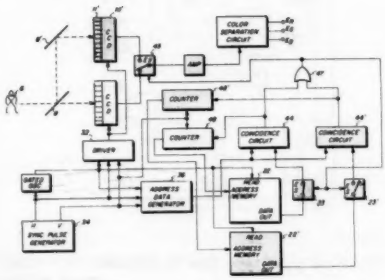
phase-locked loop is in any other mode than said phase-locked mode, said voltage-controlled oscillator means including a voltage controlled oscillator circuit comprising a plurality of amplifying means, a load circuit connected between given output electrodes of said amplifying means, feedback means for feeding signal components generated at output terminals of said load circuit back to signal input electrodes of said amplifying means to apply positive feedback thereto, variable current source circuit means having a voltage-controlled input terminal to vary a bias current to said amplifying means, variable voltage source circuit means for detecting a current change in said variable current source circuit means and converting said current change into a voltage change to generate an output in a same direction as said current change, and bias means for supplying an output voltage of said variable voltage source circuit means to said amplifying means to thereby maintain dc bias levels at the output electrodes of said amplifying means at a substantially constant value.

4,524,390

IMAGING APPARATUS

James U. Lemke, Delmar, Calif., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 7, 1983, Ser. No. 472,511
Int. Cl.³ H04N *3/02*
U.S. Cl. 358—213 **16 Claims**



1. Apparatus for producing signals corresponding to an optical image, said apparatus comprising

(a) first and second area array imaging devices comprised of respective rows of pixels, either of which devices may have one or more defective pixels, the defective pixels of one imaging device being different from the defective pixels of the other,

(b) beam-splitting means adapted to receive said optical image and to image said optical image simultaneously upon both said first and second imaging devices,

(c) memory means adapted to store the addresses of defective pixels of both said imaging devices,

(d) means for simultaneously scanning row-by-row both said imaging devices to produce signals in correspondence with the pixels thereof,

(e) output means,

(f) signal actuable switch means for receiving the signal outputs of said first and said second imaging devices and for conveying one or the other of said said outputs to said output means, and

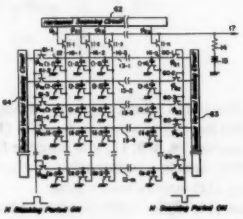
(g) means cooperative with said means for scanning and said memory means for producing a switch actuating signal when there is coincidence between the instantaneous scanned address of a defective pixel of one imaging device and the address of a stored defective pixel of that imaging device, said switch actuating signal being applied to said switch means for actuating said switch and thereby causing the signal output of said switch means to represent, without defect, said optical image.

4,524,391

TWO-DIMENSIONAL SOLID-STATE IMAGE SENSOR DEVICE

Junichi Nishizawa; Takashige Tamamushi, both of Sendai; Koji Shimanuki, and Masafumi Inuiya, both of Ashigarakami, all of Japan, assignors to Fuji Photo Film Co., Ltd., Minamia Shigara, Japan

Filed Feb. 13, 1984, Ser. No. 579,644
Claims priority, application Japan, Feb. 22, 1983, 58-26932
Int. Cl.³ H04N *3/12*
U.S. Cl. 358—213 **4 Claims**



1. A two-dimensional solid-state image sensor device, comprising:

(a) a plurality of picture cells which are two-dimensionally arranged in column and row directions;

each picture cell comprising:

(a-1) a static induction transistor having first and second main electrode regions formed of semiconductor regions with one conductivity type which are disposed on opposite sides of a high resistance semiconductor channel region, and a gate region formed of a semiconductor region with the other conductivity type which is adjacent to said channel region to control a current flowing between said first and second main electrode regions, and

(a-2) a transparent electrode disposed via a capacitance on at least a portion of said gate region, in a manner that light is incident through said transparent electrode to said gate region in which the carrier produced by the light excitation is stored to control said current;

(b) a plurality of selection lines, each of which connects the gate regions of said picture cells in each column in common via the capacitances;

(c) means for connecting said plurality of selection lines to a readout vertical scanning circuit during each horizontal scanning period so that a read pulse voltage is sequentially applied to said plurality of selection lines from said readout vertical scanning circuit;

(d) a plurality of signal readout lines, each of which connects the first main electrode regions of said picture cells in each row in common, each picture cell being selected in said column and row directions so that a signal is read out therefrom;

(e) means for connecting said plurality of signal readout lines to a horizontal scanning circuit during each horizontal scanning period so that a readout pulse is sequentially applied to said plurality of signal readout lines from said horizontal scanning circuit; and

(f) means for connecting said plurality of selection lines to a refresh vertical scanning circuit during each horizontal scanning period so that a refresh pulse voltage is applied to the selected selection line from said refresh vertical scanning circuit.

4,524,392

CINE FILM-VIDEO SCANNER SYSTEM

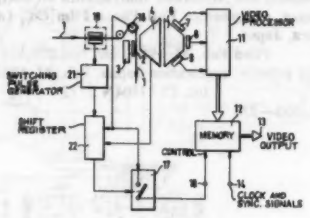
Dieter Poetsch, Ober-Ramstadt, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed May 16, 1984, Ser. No. 611,020

Claims priority, application Fed. Rep. of Germany, May 19, 1983, 3318253

Int. Cl.³ H04N *7/18*

U.S. Cl. 358—214 **7 Claims**



1. Cine film-video scanner system having

means (16) for transporting a cine film (1);

a video scanner (4, 6–9, 11) scanning the film and developing electrical signals representative of the scene on the film;

a memory (12) stroing said signals;

and means (14, 18) for controlling read-out of the memory in accordance with a television standard to derive an output signal (13),

and comprising

film splice or damage recognition means (19) located in advance—with respect to the direction of movement of the film—of the video scanner and deriving a "damage" signal;

and means (17) coupled to the film splice or damage recognition means and responsive to said "damage" signal for inhibiting entry into the memory (12) of signals from the video scanner upon sensing occurence of splices or damaged film areas for at least one frame of film,

said memory being controlled to repeat read-out of previously stored signals representative of a previous frame of the film and to provide said output signals.

4,524,393

FACSIMILE COMMUNICATION SYSTEM

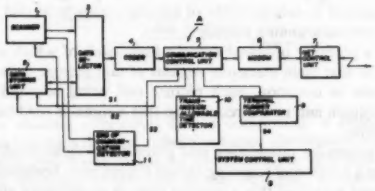
Yoshiaki Ohzeki, Atsugi, Japan, assignor to Ricoh Company, Ltd., Japan

Filed Feb. 18, 1983, Ser. No. 467,835

Claims priority, application Japan, Feb. 19, 1982, 57-25387

Int. Cl.³ H04N *1/32*

U.S. Cl. 358—257 **6 Claims**



1. A facsimile communication system for carrying out communication between a transmitter and a receiver, said receiver comprising;

a facsimile receiving system for receiving and processing signals transmitted from said transmitter;

first storing means for storing transmitter terminal numbers of prearranged transmitters and their designated time for communication;

second storing means for storing transmitter terminal numbers of non-prearranged transmitters and their temporarily designated time for communication which is designated in accordance with the request for communication by said non-prearranged transmitters, said second storing means supplying the thus stored terminal numbers and the temporarily designated time to the corresponding non-prearranged transmitters;

allowable transmitter terminal number receiving means for receiving a transmitter terminal number from either one of said first and second storing means when the corresponding designated time is reached; and

comparing means for comparing the transmitter terminal number contained in said allowable transmitter terminal number receiving means and the transmitter terminal number currently transmitted from the transmitter, said comparing means supplying a reception allowable signal to said transmitter when the two terminal numbers are matched; whereas, said comparing means supplying a reception rejection signal to said transmitter and at the same time an operation command signal to said second storing means when the two terminal numbers are mismatched.

4,524,394

IMAGE FORMATION SYSTEM

Nao Nagashima, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 2, 1982, Ser. No. 394,788

Claims priority, application Japan, Jul. 10, 1981, 56-108720

Int. Cl.³ H04M *1/22*

U.S. Cl. 358—296 **7 Claims**

1. An image formation system, comprising:

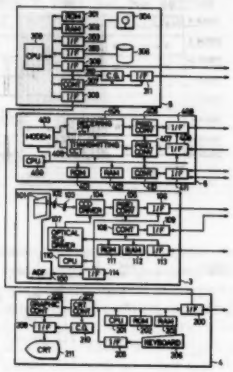
processing means for processing character data for output as image data;

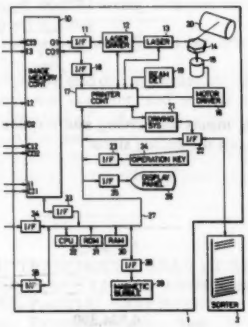
reading means for reading image data from an original;

recording means for recording the image data output from either said processing means or from said reading means onto a recording medium;

storage means having a plurality of storage sections for storing therein the recording medium from said recording medium; and

control means for controlling said storage means to differentiate a storage mode of the recording medium in accordance with selection of said processing means or said reading means.





4,524,395

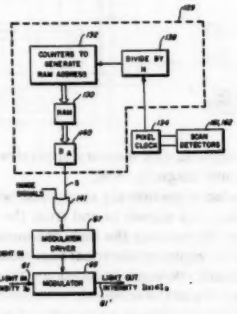
MULTI-MODE REPRODUCTION APPARATUS

Martin E. Banton, Fairport, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Apr. 22, 1983, Ser. No. 487,636

Int. Cl.³ H04N *1/30*; G01D *15/14*

U.S. Cl. 358—300 **6 Claims**



1. In an apparatus for reading a document to provide image signals representative of the document image content wherein the document image content is xerographically processed to provide a developed image of the document image content on a photoreceptor for raster scanning by a high intensity beam of light, with light collecting means disposed in predetermined spaced relation with said photoreceptor for intercepting and collecting light reflections from said photoreceptor when scanning said developed image, said light collecting means including a collector tube, and light detecting means for generating image signals in response to the presence or absence of said light reflections, said collector tube capturing said light reflections and transmitting captured light axially within said collector tube to said light detecting means, the improvement comprising:

means for regulating the intensity of said beam as said beam scans across said photoreceptor to offset internal light transmission losses of said collector tube.

4,524,396

PLAYBACK PREAMPLIFIER FOR MAGNETIC TAPE RECORDINGS

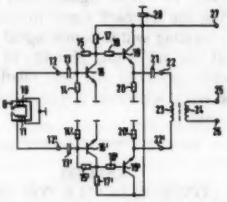
Axel Schulz, Bickenbach, and Josef Sochor, Dieburg, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Aug. 19, 1983, Ser. No. 524,684

Claims priority, application Fed. Rep. of Germany, Sep. 2, 1982, 3232610

Int. Cl.³ G11B *5/02*

U.S. Cl. 360—67 **5 Claims**



1. Playback preamplifier for a magnetic tape recorder-reproducer equipment of the kind having playback magnetic heads mounted on the periphery of a rotating disk, rotary windings rotating with said disk of an inductive system for transmitting broadband signals from said rotating windings to stationary circuits and preamplifer circuits interposed between said respective winding heads and rotary windings incorporating the improvement wherein:

the preamplifier circuits respectively serving said heads are each constituted of two symmetrical amplifier branches, each said amplifier branch has, in cascade, a grounded emitter stage having broadband negative voltage-feedback and a grounded collector stage having broadband feedback generated by current in an emitter-connected load resistor the outputs of said grounded collector stages of the amplifier branches of each of said preamplifier circuits being connected to a corresponding rotary winding of said inductive transmission system.

4,524,397

HEAD POSITIONING SYSTEM FOR A DISC DATA STORE

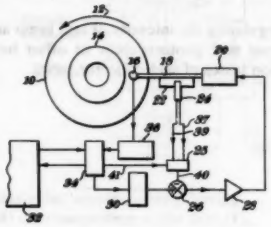
Brian D. Chalmers, 1 Morar Pl., Kinross, Tayside; David S. Ruxton, 2 Banks Crescent, Crieff, both of Scotland, and Kenneth L. Miller, 24108 E. River Rd., Grosse Ile, Mich. 48132

Filed Jan. 27, 1983, Ser. No. 467,126

Claims priority, application United Kingdom, Sep. 19, 1980, 8030338

Int. Cl.³ G11B *21/10*

U.S. Cl. 360—77 **9 Claims**



1. A feedback servomechanism for positioning a head adjacently to a selectable one out of a plurality of concentric, circular, data storage tracks on a rotary disc in a disc data store, said servomechanism comprising;

a head position transducer coupled to said head and providing, as output, a plurality of signals indicative of the radius of interaction of said head on a disc,

a feedback signal selector for providing, in response to a selection signal, a selectable one out of said plurality of output signals from said transducer as the feedback signal for said servomechanism, and,

a controller for examining the accuracy with which said head is positioned relatively to said tracks when each of said plurality of output signals from said transducer is provided as the feedback signal to said servomechanism and for providing said selection signal to said selector to select that one out of said plurality of transducer output signals which positions said head relatively to said tracks with least error, whenever it is required that said head be so positioned.

4,524,398

VELOCITY CONTROL DEVICE FOR MAGNETIC DISC APPARATUS AND METHOD THEREFOR

Masao Fujiki, Tokyo, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed May 12, 1983, Ser. No. 494,019

Claims priority, application Japan, May 17, 1982, 57-82667

Int. Cl.³ G11B *5/55*

U.S. Cl. 360—78 **2 Claims**

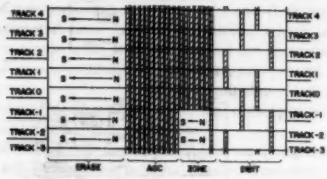
1. A velocity control device for a magnetic disc apparatus for reading out from or writing data on a recording track of a magnetic disc having servo sectors and data sectors, using a magnetic head, comprising:

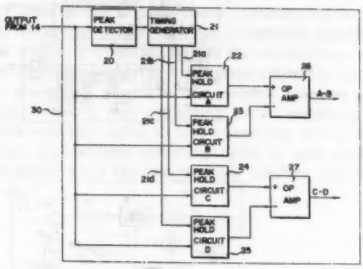
(a) position signal generating means for generating a two-phase signal which determines a target position of said magnetic head;

(b) analog-to-digital signal converting means for converting the two-phase signal to a digital signal;

(c) computing means for computing a target velocity and a real velocity of said magnetic head from the digital signal and for computing a difference between the target velocity and the real velocity;

(d) digital-to-analog signal converting means for converting the difference obtained by said computing means to an analog signal; and





(e) driving means for driving said magnetic head in accordance with the analog signal.

4,524,399

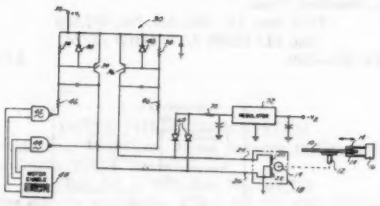
MAGNETIC DISK MEMORY POWER SUPPLY

David B. Jepsen, San Jose, Calif., assignor to Tandon Corporation, Chatsworth, Calif.

Filed Jun. 2, 1982, Ser. No. 384,428

Int. Cl.³ G11B *5/012, 5/45;* G05B *19/40;* G04B *19/00*

U.S. Cl. 360—97 **6 Claims**



1. A magnetic disk memory apparatus including:

a rotatable magnetic disk;

a transducer operatively associated with the disk for transferring data signals to and from the disk;

a motor for rotating the disk, the motor having terminals;

means for applying electrical energizing pulses to the motor terminals, voltages induced by the action of the motor appearing at the terminals between energizing pulses; and

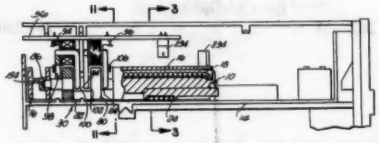
means for conditioning the induced voltages to provide an output usable as a source of electrical power for various electrical components of the disk memory apparatus.

4,524,400

MAGNETIC TRANSDUCER POSITIONING APPARATUS

Gill Cantwell, 2434 Purdue Ave., Los Angeles, Calif. 90064

Filed Feb. 1, 1983, Ser. No. 462,740
Int. Cl.³ G11B 5/55, 21/08
U.S. Cl. 360—106 24 Claims



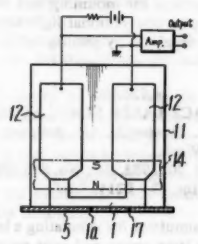
1. Magnetic transducer positioning apparatus comprising:
(a) a carriage carrying magnetic transducer means;
(b) means for applying a force to said carriage to move said carriage to a predetermined position including:
(1) a first member having a first plurality of force receiving surfaces of a first predetermined spacing;
(2) a second member disposed adjacent said first member and having a second plurality of force receiving surfaces of a second predetermined spacing, said second predetermined spacing being different from said first predetermined spacing;
(3) a driving means disposed adjacent said first and second members;
(4) means for moving said driving means into simultaneous engagement with said first and second surfaces for aligning at least one of said second surfaces with one of said first surfaces; and
(5) one of said first and second members being substantially fixed relative to the other of said first and second members.

4,524,401

MAGNETIC TRANSDUCER HEAD UTILIZING MAGNETO RESISTANCE EFFECT WITH A BIAS FIELD AND PARTIAL SATURATION

Hiroyuki Uchida; Takehiro Nagaki, both of Yokohama; Shigeyoshi Imakoshi, Atsugi; Yutaka Soda, Yokohama; Junkichi Sugita, Ebina, and Tetsuo Sekiya, Yokohama, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Dec. 22, 1981, Ser. No. 333,423
Claims priority, application Japan, Dec. 26, 1980, 55-186502
Int. Cl.³ G11B 5/30
U.S. Cl. 360—113 11 Claims



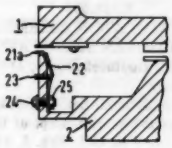
1. A magnetic transducer head utilizing magneto resistance effect, comprising:
a thin film magneto resistance effect element having an elongated edge arranged to closely confront a record track of a magnetic recording medium for scanning coupling with a signal recorded on the record track, said elongated edge being elongated in a longitudinal direction,
current supplying means connected with said element to produce a current flow in the longitudinal direction in said element,
biasing means coupled with said element to apply a D.C. bias magnetic field to said element, and
means comprising the configuration of said element and the disposition of said elongated edge relative to said biasing means such that a demagnetizing field is produced which is relatively intense in a first region of said element at said elongated edge and is relatively less intense in a second region of said element remote from said elongated edge, with said D.C. bias magnetic field being of a strength to saturate said element at the second region thereof while the first region remains sensitive to a signal magnetic field from said record track of the magnetic recording medium.

4,524,402

ROTARY MAGNETIC HEAD DRUM APPARATUS

Sachio Ueda, Sagamihara; Shigehiro Toriyama, Yamato, and Yuichi Matsushita, Ebina, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Jun. 29, 1982, Ser. No. 393,295
Claims priority, application Japan, Jul. 3, 1981, 56-103202
Int. Cl.³ G11B 5/10, 15/60
U.S. Cl. 360—130.24 7 Claims



1. A rotary magnetic head drum apparatus of a helical scan type video tape recorder comprising a drum at least a portion of which is fixed, said drum having an outer surface around which a magnetic tape is wound for reproduction, at least one rotary magnetic head having a contact surface of a predetermined shape for reproducing a signal from said magnetic tape, said head moving through at least one switching position relative to said drum and which is located substantially adjacent to a position where said magnetic tape tangentially contacts said drum, said contact surface of the head contacting said tape during reproducing; and a member having approximately said predetermined shape of said contact surface of the head and projecting radially from the outer surface of said drum adjacent to said switching position to contact said magnetic tape and locally displace said magnetic tape radially outward from said outer surface thereby to reduce impact error in a signal reproduced from said magnetic tape by said magnetic head.

4,524,403

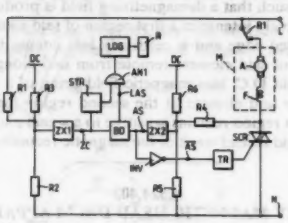
WASHING MACHINE MOTOR SPEED CONTROL CIRCUIT

Siya V. Seth, Barking, England, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Jul. 21, 1983, Ser. No. 515,734
Claims priority, application United Kingdom, Aug. 6, 1982, 8222699
Int. Cl.³ H02H 3/26
U.S. Cl. 361—86 13 Claims

1. A washing machine motor speed control circuit comprising: a semiconductor controlled rectifier (SCR) connected in series with the motor to an AC mains supply voltage, a trigger circuit for firing the SCR at a controllably variable instant in each half cycle of the AC mains supply voltage in order to control the average power applied to the motor, means for detecting a short circuit fault in said SCR comprising a bistable

device arranged to be set to a first state each time the modulus of the mains supply voltage drops below a first value and thereafter to be set to a second state only if the modulus of the voltage across the SCR subsequently rises to a second value greater than the first value, and a logic circuit which causes the



mains supply voltage to the motor to be disconnected if the bistable device is not set to its second state in each half cycle of the mains supply voltage for a given number, exceeding two, of consecutive half cycles of the same polarity or of alternating polarity.

4,524,404

HIGH VOLTAGE INSULATOR ASSEMBLAGE HAVING SPECIALLY-CHOSEN SERIES RESISTANCE

Manoranjan P. Verma, Goethestrasse 5, D-6805 Heddesheim, Fed. Rep. of Germany

Filed Jun. 3, 1982, Ser. No. 384,603

Claims priority, application Fed. Rep. of Germany, Jun. 26, 1981, 3125203; European Pat. Off., Feb. 5, 1982, 82100844.8

Int. Cl.³ H01B *17/42*

U.S. Cl. 361—132 **16 Claims**

1. An insulator assemblage which defines a path between ground and a high voltage electrical line, comprising (a) at least one first body having a plurality of sheds, comprising an insulator material and having a characteristic critical leakage current pulse i; and (b) at least one second body comprised of a resistance material, said second body being conductively connected in series with said first body, the product of the resistance r of said resistance body and i being approximately 5% to 30% of the total line-to-ground voltage across said assemblage.

16. A method for preventing flashover in an insulator exposed to atmospheric pollution, comprising the steps of:

(a) determining a characteristic critical leakage current pulse i for said insulator; and

(b) conductively connecting a resistance body having a predetermined resistance value r in series with said insulator, whereby an insulator assemblage is formed,

the product of r and i being between approximately 5% to 30% of the total line-to-ground voltage across said insulator assemblage.

4,524,405

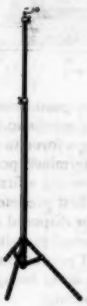
FAN-SHAPED INDIRECT LIGHTING REFLECTOR

Charles M. Heard, 107 Aribe Dr., San Antonio, Tex. 78216

Filed Sep. 8, 1983, Ser. No. 530,369

Int. Cl.³ G03B *15/02*

U.S. Cl. 362—18 **20 Claims**



1. A collapsable light-reflector apparatus in an improved means for utilization of a idependent light-source of known flashing or constant beam types in producing indirect-lighting effects, as are principally used in photography wherein a unit of said light-source types is secured inversly to an area to be illuminated by the emitted beam being reflected by means of positioned reflective device to thereby indirectly illuminate said area, the improvement reflector apparatus comprises a fan-shape flexible cover having an inner-surface of reflective material and being supported and forward-contoured by a radial array of elongated pre-curved ribs and stays of semi-rigid material, said array being pivotally retained upon the upper-section of a two-sectional support structure, said upper-section structure comprises attaching, positioning and frictional stabilization means for directing the beam of one said light-source to impact said cover's inner-surface at an upward oblique angle to thereby cause the beam to deflect and diffuse into broadened patterns of richochetted rays reflected onto the area to be so illuminated by indirect-lighting effects, said lower-section support comprises means for axially tilting and stabilizing said upper-section as a means of directionally controling said richochetted rays, additionally said lower-section support structure comprises means for mounting and stabilizing said reflector apparatus upon conventional light-support types of equipment, as is in general use by photographers.

4,524,406

COMPACT LASER SIMULATOR

James R. Schaffer, Jr., Huntsville, Ala., assignor to The Boeing Company, Seattle, Wash.

Filed Jul. 20, 1983, Ser. No. 515,206

Int. Cl.³ F21V *7/04*

U.S. Cl. 362—32 **9 Claims**

1. A compact laser simulator for simulating a laser spot on or off axis when testing laser range and spot receivers and the like, the simulator comprising:

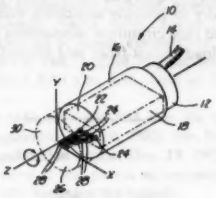
a stationary mount having an electrical power source connected thereto;

an electronic control housing rotatably attached to the mount and the power source, the housing having electronic controls therein;

a light source mounting plate attached to the front of the control housing;

an "on" axis light source mounted in the center of the mounting plate; and

at least one "off" axis light source mounted on the mounting plate and in a spaced relationship to the "on" axis light



source, the "on" axis and "off" axis light sources connected to the electronic controls.

4,524,407

DEVICE FOR ADJUSTING THE INCLINATION OF THE LIGHT AXIS OF A HEADLAMP FOR MOTOR VEHICLES

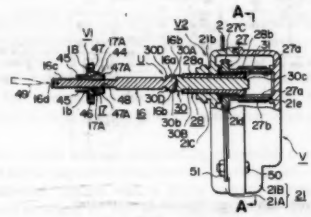
Kenkichi Igura, Fujisawa, Japan, assignor to Ichikoh Industries, Ltd., Tokyo, Japan

Filed Aug. 10, 1984, Ser. No. 639,318

Claims priority, application Japan, Aug. 16, 1983, 58-126165[U]; Aug. 29, 1983, 58-132167[U]

Int. Cl.³ F21V *3/18*

U.S. Cl. 362—66 **6 Claims**



1. A device for adjusting the inclination of the light axis of a headlamp for motor vehicles comprising:

a level-adjusting means including

a casing;

a driver mans having a motor housed in the casing;

a hollow gear means operationally connected to the driver means and located in the casing in such a way that it is rotated at a certain position in the casing by means of the driver means;

a cylindrical means inserted into the hollow gear means and moved linearly when the hollow gear means is rotated;

a converter means for converting the rotation of the hollow gear means to a force which causes the cylindrical body means to move linearly; and

an adjusting rod means arranged through the cylindrical means and reciprocated in association with the movement of the cylindrical body means to adjust the light axis of the headlamp,

and

aim-adjusting means having a connecting rod, which is connected, at one end thereof, to the adjusting rod means of the level-adjusting means through a first universal coupling means, arranged coaxially with the adjusting rod means, arranged coaxially with the adjusting rod means, connected at the middle portion thereof, to the headlamp through a second universal coupling means, and extended, at the ofhter end thereof, from the front side of the headlamp for hand-operated adjustment.

4,524,408

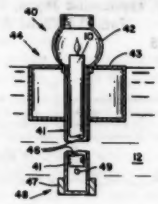
CANDLE HOLDER COMBINATION

Salvador A. Minera, 1921 Taraval, San Francisco, Calif.

Filed Jun. 21, 1984, Ser. No. 622,962

Int. Cl.³ F21L *19/00*

U.S. Cl. 362—163 **22 Claims**



1. The combination for holding a candle having a specific gravity less than unity with given cross-sectional dimensions and a length which is at least twice as great as said given cross-sectional dimensions; comprising float means including a passageway dimensioned to receive said cross-sectional dimensions of said candle with a close sliding fit and having an axial length of at least about one inch; a container of water for freely receiving said float means with said candle in said passageway; and stabilizing means beneath the surface of said water within said container for maintaining said axial length of said passageway in a substantially vertical position with the upper end of said passageway at the surface of said water in said container when said candle is received in said passageway.

4,524,409

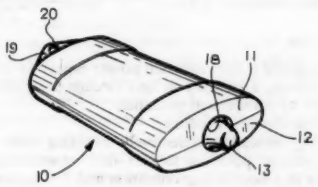
FLASHLIGHT

Louis Yakubek, Berlin, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed Mar. 21, 1984, Ser. No. 592,043

Int. Cl.³ F21L *7/00*

U.S. Cl. 362—189 **8 Claims**

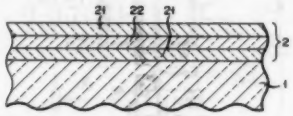


1. In a battery operated flashlight wherein an end portion of a bulb extends through one end of an elongated casing which supports the bulb, a pair of batteries in side-by side, spaced relationship and a circuit which is completed between the batteries and the bulb by compressing the sides of the casing, the improvement wherein said casing is formed of two identical elongated, semi-eliptical, molded plastic halves, marginally sealed together in face-to-face relationship with the end portion of the bulb extending through an opening formed by matching semi-circular walls at the margin of one end of the halves.

4,524,410
INCANDESCENT LAMP WITH FILM OF ALTERNATELY STACKED LAYERS

Akira Kawakatsu, and Fumio Yamamoto, both of Yokohama, Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Sep. 23, 1983, Ser. No. 535,162
Claims priority, application Japan, Sep. 28, 1982, 57-167603
Int. Cl.³ F21M *3/14*
U.S. Cl. 362—255 **4 Claims**

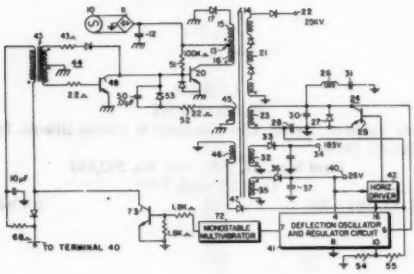


1. An incandescent lamp comprising:
a glass bulb having a built-in filament; and
a transparent film formed on at least one surface of said bulb, said transparent film having a structure containing at least three layers wherein a first layer comprising a non-crystalline metal oxide and having a first reflectivity and a second layer comprising a metal oxide and having a second reflectivity which is different from said first reflectivity are alternately stacked.

4,524,411
REGULATED POWER SUPPLY CIRCUIT

Donald H. Willis, Indianapolis, Ind., assignor to RCA Corporation, Princeton, N.J.

Filed Sep. 29, 1982, Ser. No. 426,360
Int. Cl.³ H02M *3/335*
U.S. Cl. 363—21 **9 Claims**

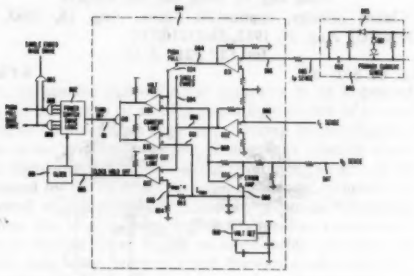


1. A switched mode regulated power supply for a television receiver having a plurality of load circuits comprising:
a source of unregulated potential;
a first transformer winding;
switching means for selectively coupling said source of unregulated potential to said first transformer winding when in a conducting condition and for uncoupling said source of unregulated potential from said first transformer winding when in a nonconducting condition;
at least a second transformer winding magnetically coupled to said first winding for receiving energy from said first winding and coupled to said load circuits for energizing at least one of said load circuits, the amount of said energy received by said second winding being limited by the degree of coupling between said first and second windings;
means coupled to said second transformer winding and to said switching means for causing said switching means to switch between its conducting and nonconducting conditions; and
a supplemental transformer winding magnetically coupled to said first transformer winding more tightly than the coupling between said first and second transformer windings for receiving energy from said first transformer winding in order to provide additional energy to said at least one of said load circuits to supplement energy received by said one load circuit from said second winding.

4,524,412
PEAK CURRENT CONTROLLED CONVERTER WITH ADDITIONAL CURRENT THRESHOLD CONTROL LEVEL TO LIMIT CURRENT TAILOUT DURING OVERLOAD CONDITIONS

Wing K. Eng, Stanhope, N.J., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Jun. 6, 1983, Ser. No. 501,501
Int. Cl.³ H02H *7/122*
U.S. Cl. 363—56 **6 Claims**

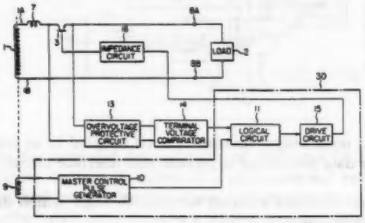


1. A power converter circuit comprising
input means for accepting a DC voltage,
output means for accepting a load,
a power switch connected to couple the input means to the output means,
means for periodically initiating conduction in the power switch,
means for sensing a current in the power switch,
means for sensing a voltage at the output means,
means for comparing a voltage of said means for sensing a voltage and generating an error voltage,
means for converting a current at said means for sensing a current to a representative voltage,
means for comparing the error voltage with the representative voltage and generating a stop signal when the representative voltage equals the error voltage to achieve voltage regulation,
means for terminating conduction in the power switch in response to the stop signal of the means for comparing,
means for establishing a current regulation voltage,
means for comparing the current regulation voltage with the representative voltage and generating a second stop signal when the current regulation voltage equals the representative voltage to achieve current regulation,
means for establishing a tailout control voltage,
means for comparing the representative voltage with the tailout control voltage and generating a disable signal when the representative voltage is greater than the tailout control voltage, and
means for inhibiting operation of the means for periodically initiating conduction in the power switch in response to the disable signal.

4,524,413
AC RECTIFIER HAVING SEMI-CONDUCTOR ACTIVE RECTIFYING ELEMENT

Tsuneo Ikenoue, 14-6, Ichiban-cho 1-chome, Sendai-shi, Miyagi; Shin-yng Liu, Miyagi; Naoki Arai, Tokyo, and Shuichi Umemoto, Kanagawa, all of Japan, assignors to Tsuneo Ikenoue; Tohoku Ricoh Co. Ltd., both of Miyagi; Stanley Electric Co., Ltd. and Micron Kiki Co., Ltd., both of Tokyo, all of, Japan

Continuation-in-part of Ser. No. 216,923, Dec. 16, 1980, Pat. No. 4,356,541. This application Sep. 9, 1982, Ser. No. 416,315
Claims priority, application Japan, Dec. 19, 1979, 54-165011
The portion of the term of this patent subsequent to Oct. 26, 1999, has been disclaimed.
Int. Cl.³ H02M *7/217*
U.S. Cl. 363—127 **3 Claims**

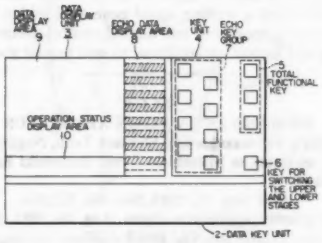


1. A rectifier for an AC input voltage, comprising:
a semiconductor active rectifying element having two main terminals and a control terminal;
a terminal voltage comparator coupled to said main terminals for comparing the input voltage with the output voltage of said semiconductor active rectifying element; and
a pulse control circuit comprising a master control pulse generator coupled to said terminal voltage comparator, an operational circuit and a drive circuit coupled to the control terminal of said semiconductor active element for controlling the same in response to the output from said master control pulse generator.

4,524,414
NUMERICAL CONTROLLER

Morio Kiyokawa, Nagoya, Japan, assignor to Mitsubishi Denki Kanushiki Kaisha, Tokyo, Japan

Filed Dec. 2, 1982, Ser. No. 446,198
Claims priority, application Japan, Dec. 9, 1981, 56-198177
Int. Cl.³ G06F *15/46, 3/14*
U.S. Cl. 364—171 **15 Claims**

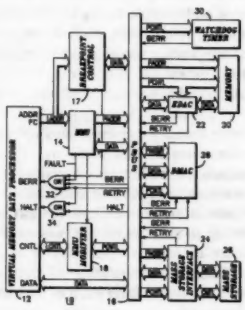


1. In a numerical controller comprising an input unit which introduces tool instructions, a memory unit which stores tool instruction numbers introduced through said input unit, an output unit which sends tool instruction numbers stored in said memory unit to a machine tool, an arithmetic unit, a control unit which controls said input unit or memory unit operation, and a setting display unit which sets tool data, machining data, and the like to said memory unit,
said setting display unit comprises:
a display unit which includes an echo display area for displaying a plurality of sets of echo data, each set being composed of a pair of echo data, a data display area for displaying data, and a numerically-controlled operation status display area for displaying the numerically-controlled operation condition;
a total functional key group for selecting pictures that respond to desired functions of said display unit;
a switching key for switching the upper and lower stages such that either the upper stages or the lower stages of each of the sets of echo data displayed on said echo display area will become effective; and
an echo key group which is provided to respond to each of the sets of echo data displayed on said echo display area, and which sets or resets the echo data that are rendered effective by said switching key.

4,524,415
VIRTUAL MACHINE DATA PROCESSOR

Marvin A. Mills, Jr., Indiatlantic, Fla.; William C. Moyer, Austin, Tex.; Douglas B. MacGregor, Austin, Tex., and John E. Zolnowsky, Austin, Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Dec. 7, 1982, Ser. No. 447,721
Int. Cl.³ G06F *9/30*
U.S. Cl. 364—200 **8 Claims**

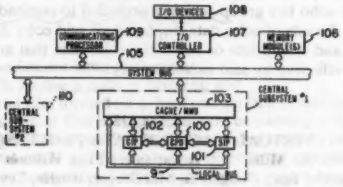


1. A virtual machine data processor comprising:
external access means for providing access to a resource external to said data processor;
instruction execution control means coupled to said external access means, for controlling the execution by said data processor of at least one instruction which requires at least one access to said resource via said external access means;
access fault recovery means coupled to said external access means and to said instruction execution control means, for storing information indicative of the state of said instruction execution control means as of the time a fault is detected with said one access, said access fault recovery means restoring the state of said instruction execution control means using said stored state information after said fault has been corrected and then enabling said instruction execution control means to resume execution of said one instruction from said restored state; and
access rerun control means coupled to said external access means and to said access fault recovery means, for enabling said external access means to rerun said one access upon said access fault recovery means enabling said instruction execution control means to resume execution of said one instruction, except in response to a rerun signal indicating that said one access should not be rerun.

4,524,416
STACK MECHANISM WITH THE ABILITY TO DYNAMICALLY ALTER THE SIZE OF A STACK IN A DATA PROCESSING SYSTEM

Philip E. Stanley, Westboro, and Piotr Szorc, Carlisle, both of Mass., assignors to Honeywell Information Systems Inc., Waltham, Mass.

Continuation of Ser. No. 140,624, Apr. 15, 1980,. This application Sep. 30, 1982, Ser. No. 430,488
Int. Cl.³ G06F *15/16*
U.S. Cl. 364—200 8 Claims



1. In a data processing system having a memory comprised of a plurality of addressable storage locations and a processing unit for executing procedures, each of the procedures including a series of operands, a stack control mechanism comprising:

stack forming means for establishing in said memory a stack of said addressable storage locations for storing said operands;

frame forming means for dynamically altering the number of storage locations in said stack by (1) acquiring a stack frame associated with each procedure to be executed by said processing unit, each of said stack frames comprising one or more storage locations for storing operands and data relating to said associated procedures, (2) modifying the number of storage locations in said acquired stack frame responsive to execution of said associated procedure; and (3) relinquishing each of said storage location in a stack frame after the execution of said associated procedure to make said relinquished storage location available to said processing unit, the most recently acquired stack frame comprising the top stack frame;

a bottom of frame register associated with each of said acquired stack frame for storing the number of storage locations included in said associated stack frames;

stack frame control means for dynamically modifying the size of said top stack frame by adding storage locations thereto or deleting storage locations therefrom in response to said processing unit executing said procedure associated with said top stack frame;

a stack top register for storing the address of the storage location in said top stack frame storing the operand most recently stored in said top stack frame;

a stack base register for storing the address of said storage location immediately preceding a storage location storing the first operand stored in said top stack frame;

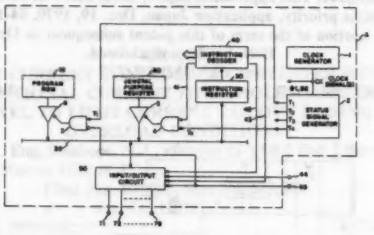
means for updating the contents of said stack top register and said stack bottom register whenever a said operand is added to or deleted from said top stack frame; and

operand accessing means for selectively accessing an operand stored in said top stack frame by indexing relative to the address stored in said stack top register or to the address stored in said stack base register.

4,524,417
TIMING SIGNAL CONTROLLED INFORMATION PROCESSING SYSTEM

Manabu Kimoto, Tokyo, Japan, assignor to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Jan. 25, 1982, Ser. No. 342,086
Claims priority, application Japan, Jan. 23, 1981, 56-8627
Int. Cl.³ G06F *3/04*
U.S. Cl. 364—200 6 Claims



1. An input-output interface circuit coupled to an internal bus in a data processing apparatus, said interface circuit comprising:

at least one first external terminal through which data is transferred;

first gating means coupled to said internal bus and to said first external terminal for transferring data from said internal bus to said first external terminal in response to a first gating signal;

second gating means coupled to said internal bus and to said first external terminal for transferring data from said first external terminal to said internal bus in response to a second gating signal;

a first path for applying said first gating signal to said first gating means;

a second path for applying said second gating signal to said second gating means;

a second external terminal for receiving a first control signal from outside of said data processing apparatus;

a third external terminal for receiving a second control signal from outside of said data processing apparatus;

first control means coupled to said first path for generating said first gating signal in response to either one of said first control signal received at said second external terminal and a reading signal generated within said data processing apparatus, said first control means transferring said first gating signal to said first path; and

second control means coupled to said second path for generating said second gating signal in response to either one of said second control signal received at said third external terminal and a writing signal generated within said data processing apparatus, said second control means transferring said second gating signal to said second path.

4,524,418
DEMAND ESTIMATION APPARATUS

Shinji Araya, Takarazuka, and Shintaro Tsuji, Nagoya, both of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 12, 1983, Ser. No. 522,696
Claims priority, application Japan, Aug. 24, 1982, 57-146512
Int. Cl.³ B66B *1/20*
U.S. Cl. 364—436 10 Claims

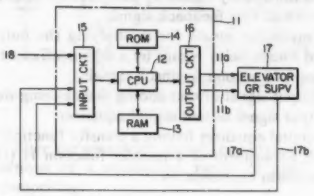
1. A demand estimation apparatus for controlling machines wherein a plurality of previous cycles and a present cycle of a fluctuating demand value are divided into a plurality of adjoining sections of given time width wherein the demand value in each section is measured and an stimated demand value is

provided based on a measured value, said apparatus comprising:

means for dividing the present cycle of fluctuating demand value to provide adjusting sections between adjoining sections,

means for measuring the demand value in each adjusting section and for providing an estimated demand value based on the measured demand value,

means for comparing the estimated demand value of an adjusting section with the esimated demand values of the two sections adjoining the adjusting section to decide if the estimated demand value of the adjusting section approxi-



mates the estimated demand value of either one of the two adjoining sections in excess of a predetermined reference value, and for moving the whole adjusting section toward the other adjoining section by a predetermined time width to a shifted position with the time widths of the adjoining sections also being revised by the amount of the shift when the approximation holds,

delivering means for delivering the estimated demand values of the revised adjoining sections and the shifted adjusting section as revised estimated values accounting for fluctuations in the demand, and

means for controlling machines in accordance with the revised estimated values.

4,524,419

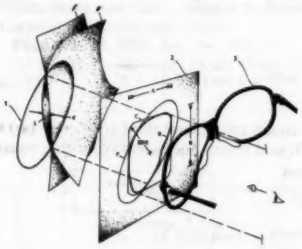
SYSTEM FOR DETERMINING THE OPTIMAL GROUND DEPTH OF AN OPHTHALMIC LENS HAVING A CLOSED HOMEOMORPHIC BOUNDARY

Larry M. Headlund, Brookline; Gary J. Marksteiner, Boston, and Richard S. Sidell, Needham, all of Mass., assignors to Intelab Medical Systems, Inc., Boston, Mass.

Filed Sep. 13, 1982, Ser. No. 417,547

Int. Cl.³ G06F *15/46*

U.S. Cl. 364—474 **4 Claims**



1. A system for determining the optimal ground depth of an ophthalmic lens having a closed homeomorphic boundary, comprising:

means for graphically projecting an orbit of the prescribed lens;

means for superimposing a projection of a spectacle frame onto the graphical projection of said orbit; and

means for dynamically adjusting said orbit to circumscribe the projection of said spectacle frame.

4,524,420

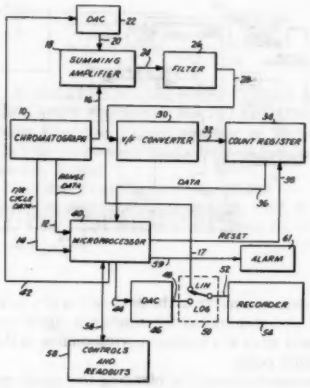
SIGNAL PROCESSING APPARATUS

David O. Glodo, and James McFaddin, both of Dallas, Tex., assignors to Core Laboratories, Inc., Dallas, Tex.

Filed Aug. 25, 1982, Ser. No. 411,522

Int. Cl.³ G06F *15/20*

U.S. Cl. 364—497 **24 Claims**



1. Apparatus for processing an input signal from a chromatograph, comprising:

logarithmic means connected to the chromatograph for receiving said input signal and producing a logarithmic signal which is indicative of the logarithm of said input signal;

detecting means connected to the chromatograph for receiving said input signal, detecting peaks therein, and producing a signal indicating the occurrence of said peaks; and

means connected to said logarithmic and detecting means for providing said logarithmic signal and said indicating signal as outputs of said processing apparatus.

4,524,421

COMPUTERIZED GRAPHICS SYSTEM AND METHOD USING AN ELECTRONICALLY SYNTHESIZED PALETTE

Anthony D. Searby, and Ian C. Walker, both of Newbury, England, assignors to Quantel Limited, Newbury, England

Filed Mar. 22, 1982, Ser. No. 360,732

Claims priority, application United Kingdom, Mar. 11, 1982, 8207084

Int. Cl.³ G06F *3/14, 15/20*; H04N *7/18*

U.S. Cl. 364—521 **26 Claims**

1. A computerized graphics system comprising:

a video screen;

synthesized palette means for generating computer signals defining at least two source colors;

selector means for selecting color-defining signals from the palette means;

processing means for mixing the color-defining signals to generate a blend signal defining the color of a blend of the selected source colors and for causing the video screen to display the blend color; and

means for storing the blend signal in the palette means for future use as a source color.

26. A system comprising:

(a) a video signal monitor having a display screen;

(b) a palette store having a plurality of storage locations

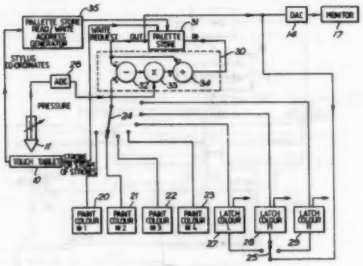
corresponding to picture points on the palette area on said screen;

(c) means for causing signals from said storage locations in the palette store to be reproduced at the corresponding picture points in the palette area of the screen;

(d) a source of a plurality of color video signals representing different colors;

(e) means for selecting a color video signal from said source;

(f) operator means responsive to operator input to designate selected picture points in said palette area;



(g) means responsive to the designation of a picture point by the operator means for reading a signal stored in said palette store at a location corresponding to the designated picture point;

(h) processor means for blending the signal read from the palette store with a selected color video signal to generate a blended video signal;

(i) means for storing said blended color video signal in said palette store;

(j) means for reading the blended color signal from the palette store and for selectively storing it in further storage.

4,524,422

DIGITAL EQUALIZER CAPABLE OF VARYING THE CENTER FREQUENCY, QUALITY FACTOR, AND GAIN TO PERFORM VARIOUS FREQUENCY CHARACTERISTICS

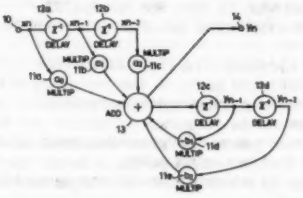
Masao Kasuga, Sagamihara, Japan, assignor to Victor Company of Japan, Limited, Yokohama, Japan

Filed Sep. 15, 1980, Ser. No. 187,328

Claims priority, application Japan, Sep. 14, 1979, 54-118627; Sep. 14, 1979, 54-118628

Int. Cl.³ G06F *15/31*

U.S. Cl. 364—724 **1 Claim**



1. A digital equalizer capable of arbitrarily varying at least one of a center frequency, a quality factor (Q), and a gain of the equalizer to perform various frequency characteristics, said digital equalizer comprising: first delay means for delaying an input digital signal by a sampling period (T);

second delay means for delaying the output signal of said first delay means by the sampling period (T);

first multiplier means for multiplying the input digital signal by a first coefficient (a_0);

second multiplier means for multiplying the output signal of said first delay means by a second coefficient (a_1);

third multiplier means for multiplying the output signal of said second delay means by a third coefficient (a_2);

adding means for adding the output signals of the first, second, and third multiplier means and first and second feedback signals;

third delay means for delaying the output signal of said adding means by the sampling period (T);

fourth delay means for delaying the output signal of said third delay means by the sampling period (T);

fourth multiplier means for multiplying the output signal of said third delay means by a fourth coefficient (b_1) to produce said first feedback signal;

fifth multiplier means for multiplying the output signal of said fourth delay means by a fifth coefficient (b_2) to produce said second feedback signal;

the output signal of said adding means being derived as the output signal of said digital equalizer;

said digital equalizer having a transfer function H (z) which is a z-transform of a transfer function H (s) in Laplace transform expressed by

$$H(s) = k \frac{s^2 + \frac{\omega 02}{Q_2} s + \omega 02^2}{s^2 + \frac{\omega 01}{Q_1} s + \omega 01^2}$$

wherein k is a normalizing coefficient, $\omega_o 1$ and $\omega_o 2$ are angular frequencies of the pole and zero respectively, Q_1 is a quality factor primarily selected for the equalizer to perform a band-pass characteristic, and Q_2 is a quality factor primarily selected for the equalizer to perform a band-elimination characteristic, said transfer function H (s) having conjugate pairs of poles and zeros which lie on positions on the same circle of a radius ω_c in the s-plane, wherein $\omega_o 1$ and $\omega_o 2$ are angular frequencies of the pole and zero respectively, ω_c is a center angular frequency of the band-pass characteristic and the band-elimination characteristic performed respectively by said digital equalizer, an angle (θ_1) between a line passing one of the positions of the conjugate pair of poles from the origin of the s-plane and the negative real axis and an angle (θ_2) between a line passing one of the positions of the conjugate pair of zeros from the origin of the s-plane and the negative real axis being so selected that $\cos \theta_2/\cos \theta_1$ is equal to the gain Q1/Q2 at the center frequency of the band-pass characteristic and band-elimination characteristic of said digital equalizer respectively, said second coefficient, (a_1) being equal to

$$-e^{-\omega cTp} \times 2 \cos (\omega_c T \sqrt{1 - p^2})$$

wherein p equals $\cos \theta_2$, said third coefficient (a_2) being equal to $e^{-2\omega_c Tp}$, said fourth coefficient (b_1) being equal to

$$-e^{-\omega cTq} \times 2 \cos (\omega_c T \sqrt{1 - q^2})$$

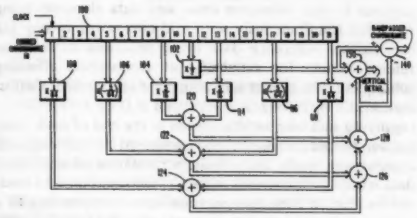
wherein q equals $\cos \theta_1$, said fifth coefficient (b_2) being equal to $e^{-2\omega_c Tq}$, and said first coefficient (a_0) being equal to

$$\left| \frac{1 + a_1 + a_2}{1 + b_1 + b_2} \right|.$$

4,524,423
DIGITAL SIGNAL SEPARATION FILTERS

Alfonse Acampora, Staten Island, N.Y., assignor to RCA Corporation, Princeton, N.J.

Filed Nov. 6, 1981, Ser. No. 319,061
Int. Cl.³ G06F *15/31*
U.S. Cl. 364—724 **10 Claims**



1. A digital filter for separating signals occupying separate frequency portions of a contiguous range of input signal frequencies, comprising:

a source of input signal;

delaying means, including a shift register coupled to said source and having a plurality of signal taps including a center tap;

respective signal weighting means, coupled to ones of said signal taps, including a center tap weighting means, for weighting signals occurring at said taps;

means, coupled to said signal weighting means, excluding said center tap weighting means for producing at a first output port a signal which is a sum of tap-weighted signals;

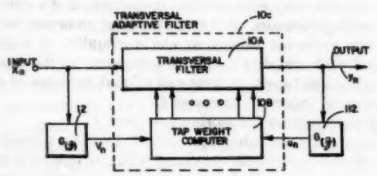
first signal combining means having a first input coupled to receive said sum of tap-weighted signals and a second input coupled to said center tap weighting means for combining applied signals in a first sense to produce output signals occupying a relatively high frequency portion of said contiguous frequency range; and

second signal combining means having a first input coupled to receive said sum of tap-weighted signals and a second input coupled to said center tap weighting means for combining applied signals in a second sense to produce output signals occupying a relatively low frequency portion of said contiguous frequency range, wherein the frequency responses of said first and second signal combining means are complementary transfer functions.

4,524,424
ADAPTIVE SPECTRUM SHAPING FILTER

Stanley A. White, Santa Ana, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Feb. 18, 1982, Ser. No. 349,871
Int. Cl.³ H03H *15/02*; G11C *19/28*; G06F *7/38*
U.S. Cl. 364—724 **8 Claims**



1. An adaptive spectrum shaping filter for selectively passing input signals of a preselected frequency to produce filtered output signals, said spectrum shaping filter comprising:

a transversal filter having an input for receiving said input signals, an output for producing said output signals, and a plurality of adjustable tap weights;

a tap weight computer having first and second inputs and having means for adjusting said tap weights of said transversal filter;

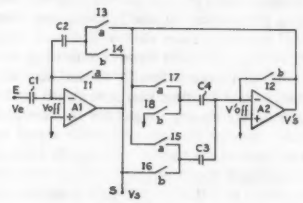
a first spectrum-shaping filter coupled between said computer first input and said transversal filter input for filtering said input signals and providing filtered input signals to said tap weight computer; and

a second spectrum-shaping filter coupled between said computer second input and said transversal filter output for filtering said output signals and providing filtered output signals to said tap weight computer.

4,524,425
HIGH-PASS FILTER OF THE FIRST ORDER AND APPLICATION THEREOF TO TELEPHONY

Jean C. Bertails, Grenoble, France, assignor to Societe Pour L'etude et la Fabrication des Circuits Integres Speciaux E.F.-C.I.S., Grenoble, France

Filed Jan. 10, 1983, Ser. No. 456,848
Claims priority, application France, Jan. 15, 1982, 82 00612
Int. Cl.³ G06G *7/00*; H03H *17/00*; H04B *12/02*
U.S. Cl. 364—825 **6 Claims**



1. A sampled filter including a high-pass filtering element of the first order comprising:

first and second operational amplifiers each having an inverting input, a non-inverting input connected to a fixed potential, and an output,

a filter input,

a first capacitor coupling the filter input to the inverting input of the first amplifier,

a filter output connected to the output of the first amplifier,

a first switch connected between the inverting input and the output of said first amplifier,

a second switch connected between the inverting input and the output of the second amplifier,

a second capacitor having a first terminal coupled to the inverting input of said first amplifier and a second terminal,

a third switch coupling said second terminal of said second capacitor to the output of said second amplifier,

a fourth switch coupling said second terminal of said second capacitor to the output of said first amplifier,

third and fourth capacitors, each having a first terminal coupled to the inverting input of said second amplifier,

fifth and sixth switches respectively coupling the output of said second and first amplifier to said second terminal of said third capacitor,

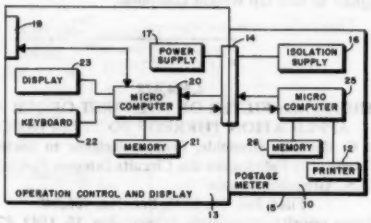
seventh and eighth switches respectively coupling the second terminal of said fourth capacitor to the ouput of said second amplifier and to a reference potential, and

a switching control circuit for ensuring periodic conduction of the various switches according to two separate phases of each of a plurality of periods, the uneven numbered switches being closed during the first phase and the even numbered switches during the second phase.

4,524,426
ELECTRONIC POSTAGE METER CONTROLLABLE BY MAILING MACHINE

Alton B. Eckert, Norwalk, and Robert B. McFiggans, Stamford, both of Conn., assignors to Pitney Bowes Inc., Stamford, Conn.

Filed Apr. 19, 1983, Ser. No. 467,724
Int. Cl.³ G06F *15/02, 15/20, 3/02*
U.S. Cl. 364—900 16 Claims

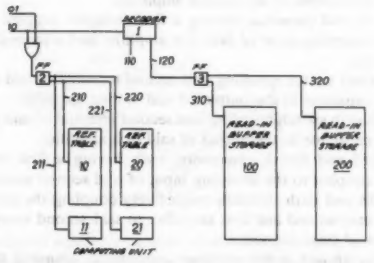


1. A portable postage meter device comprising an electromagnetically secure housing, a postage accounting system having a register and a postage printer coupled thereto within said housing, port means on said housing and comprising the sole external access to enter data in and read data from said accounting system, said port means comprising means inhibiting application of voltages directly to said accounting system from external of said housing, said port means further comprising separable intercoupling means for intercoupling said device with an external device, and serial signal transmission means in said housing for transferring signals between said port and said accounting system solely by serial coded signals, and means responsive to a determined first condition for continuously applying data corresponding to the contents of said register to said port means.

4,524,427
METHOD FOR MAKING COMPARISONS BETWEEN REFERENCE LOGICAL ENTITIES AND LOGICAL ENTITIES PROCEEDING FROM A FILE

Jacques Vidalin, Montpellier, and Jean L. Aucouturier, Gradignan, both of France, assignors to The University of Bordeaux 1, France

Filed Aug. 4, 1982, Ser. No. 404,979
Int. Cl.³ G06F *7/24*
U.S. Cl. 364—900 9 Claims



1. A method for sequentially comparing data elements issuing from a stream of information to reference data stored in columns of a reference data table where a comparison computing unit is associated with each of said columns of said reference table, said comparing method providing comparison results in the form of TRUE or FALSE outputs adapted to allow said data elements to be separated and collated, said method comprising the steps of:

(a) recording on a first column of said table an initial reference data and comparing at least a first of said data elements issuing from said stream of information to said reference data;

(b) recording said data elements issuing from said stream of information on a second column of said reference table to provide further reference data, said data elements being recorded simultaneously with said comparing in step (a), said further reference data being recorded to serve as reference data for a subsequent comparison affecting subsequent data elements issuing from said stream of information;

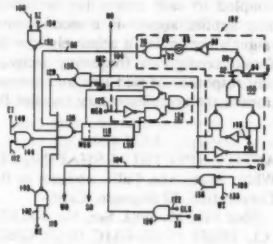
(c) applying said comparison results at the end of each comparison to said subsequent comparison to be executed, said comparison results controlling permutation of sources of data which generate said stream of information into read-out or read-in files, the permutation corresponding to a saving or deletion of data elements of said stream of information in dependence on said TRUE or FALSE outputs, said comparison results also controlling the restart or storage of items of information;

(d) applying said comparison results at the end of each comparison to said subsequent comparison to be executed, said comparison results controlling the permutation of said columns of said reference table into read-out and into read-in categories, and controlling the permutation of said computing units for comparisons corresponding to said reference table columns.

4,524,428
MODULAR INPUT-PROGRAMMABLE LOGIC CIRCUITS FOR USE IN A MODULAR ARRAY PROCESSOR

Jan Grinberg, and Siegfried Hansen, both of Los Angeles, Calif., assignors to Hughes Aircraft Company, El Segundo, Calif.

Filed Jan. 26, 1982, Ser. No. 342,639
Int. Cl.³ G06F *7/48*
U.S. Cl. 364—900 17 Claims



1. In a modular array processor associated with a control processor, said array processor being comprised of a plurality of elemental processors, each said elemental processor including a data exchange subsystem and a plurality of modules associated with said data exchange subsystem for the transfer of data thereinbetween, at least one of said modules of each said elemental processor comprising:

(a) a memory register for storing data; and

(b) an input programmable logic circuit having a plurality of control lines operatively associated with said control processor, said logic circuit being responsive to control signals provided thereby, said logic circuit including:

(i) control signal selectable means for serially receiving data from said data exchange subsystems;

(ii) control signal selectable means for combining said serially received data with serial data previously stored in said memory register and for serially storing the resultant

serial data from said combination in said memory register in place of the previously stored data; and

(iii) control signal selectable means for serially transmitting the resultant serial data stored in said memory register to said data exchange subsystem.

4,524,429

INTEGRATED MEMORY MATRIX COMPRISING NONVOLATILE REPROGRAMMABLE STORAGE CELLS

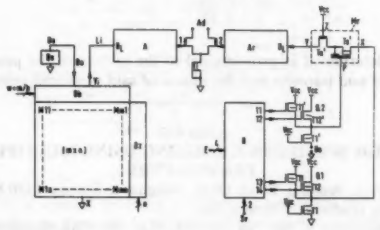
Burkhard Giebel, Denzlingen, Fed. Rep. of Germany, assignor to ITT Industries, Inc., New York, N.Y.

Filed Mar. 4, 1983, Ser. No. 472,349

Claims priority, application European Pat. Off., Mar. 24, 1982, 82102447.8

Int. Cl.³ G11C *11/40*

U.S. Cl. 365—154 **3 Claims**



1. Integrated memory matrix comprising nonvolatile reprogrammable storage (memory) cells arranged in rows and columns, which are each provided with a storage transistor (Ts) from the source-drain current of which, upon selecting the address of the storage cell (M) of the storage transistor (Ts), there is derived a first voltage signal which is applied to the one input of a comparator circuit, whereas from the source-drain current of an identical reference storage transistor of like construction with respect to said storage transistor (Ts) there is derived a second voltage signal which is applied to the other input of said comparator circuit, characterized by the following features:

the first input (1) of said comparator circuit (Ad) is connected to the output of a first read amplifier, with the source-drain current of said storage transistor (Ts) of said storage cell (M) flowing in the input circuit thereof,

to the second input (2) of said comparator circuit (Ad) there is connected the output of a reference read amplifier (Ar) with the source-drain current of the storage transistor (Ts') of a non-programmable reference cell (Mr) of a construction identical to that of said storage cells (M), flowing in the input circuit thereof,

in the circuit containing the input circuit of said reference read amplifier (Ar) and the source-drain line of said storage transistor (Ts') of said reference cell (Mr), there is arranged a first voltage source (Q1) whose voltage is adjustable in a step-by-step manner, and/or the gate electrode of said storage transistor (Ts') of said reference cell (Mr) is connected to the one terminal of a stepwisely adjustable second voltage source (Q2), and

said reference read amplifier (Ar), said reference cell (Mr) and said stepwisely adjustable voltage sources (Q1, Q2) or one of said voltage sources (Q1, Q2) are/is integrated in the semiconductor body of said memory matrix (S) respectively.

4,524,430

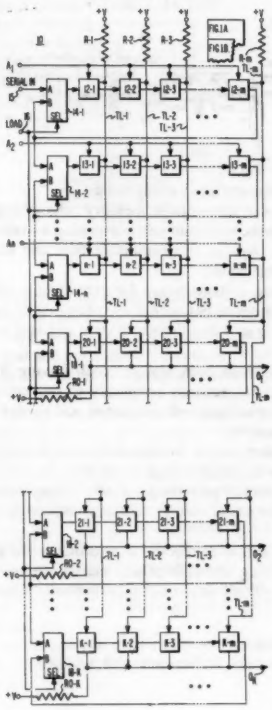
DYNAMIC DATA RE-PROGRAMMABLE PLA

David W. Page, San Diego, Calif., assignor to Burroughs Corporation, Detroit, Mich.

Filed Jan. 11, 1983, Ser. No. 457,177

Int. Cl.³ G11C *13/00*

U.S. Cl. 365—189 **16 Claims**



9. A re-programmable logic array comprising:

a. an AND array disposed for receiving n input signals on n input terminals and having m term lines, wherein n and m are integers greater than one, said AND array having n×m cells each of which comprises:

i. first and second transistor means coupled in series between one of said term lines and a reference potential, each of said transistor means having a control element;

ii. a first charge storage element coupled to the control element of said first transistor means;

iii. one of said n input terminals being coupled to the control element of said second transistor means;

b. an OR array providing k output lines and being coupled to said AND array by said term lines wherein k is an integer, said OR array having m×k cells each of which comprises:

i. third and fourth transistor means coupled in series between one of said output lines and a reference potential, each of said transistor means having a control element;

ii. a second charge storage element coupled to the control element of said third transistor means; and,

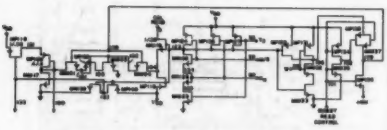
iii. one of said m term lines being coupled to the control element of said fourth transistor means.

4,524,431

HIGH-SPEED NONVOLATILE MEMORY ARRAY

Roger A. Haken, and William E. Feger, both of Richardson, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Feb. 1, 1982, Ser. No. 344,587
Int. Cl.³ G11C *11/40*
U.S. Cl. 365—222 **7 Claims**



1. A memory array comprising:

a matrix of non-volatile memory cells arranged in rows and columns, each said cell comprising a multi-dielectric transistor having programmable first and second threshold voltage states;

reference voltage means for providing a reference voltage intermediate between those provided by ones of said cells having said first threshold state and said second threshold state;

a plurality of comparators, each having first and second inputs respectively connected to said cells in at least one of said columns of said matrix and to said reference voltage means;

row select means for connecting said cells in one of said rows to respective ones of said comparators, each said comparator providing a digital output in accordance with the threshold voltage state of a respective one of said cells; and

refresh means connected to said matrix for reading out and rewriting said cells of said matrix one row at a time, and said refresh means being periodically actuated.

4,524,432

MEASUREMENT OF POROSITY AND FORMATION FACTOR USING SLOW COMPRESSIONAL WAVES

David L. Johnson, Danbury, Conn., assignor to Schlumberger Technology Corporation, New York, N.Y.

Filed Dec. 15, 1981, Ser. No. 331,059
Int. Cl.³ G01V *1/40, 1/28*
U.S. Cl. 367—25 **6 Claims**

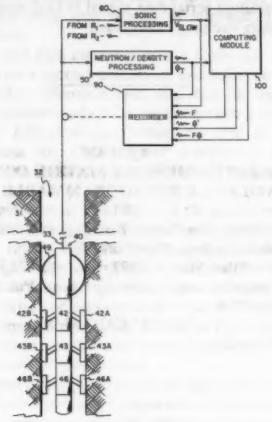
2. A method for determining the formation factor of subsurface formations, comprising the steps of:

deriving a measure of the porosity of the formations;

establishing a slow compressional wave in the formations;

measuring the velocity of the slow compressional wave that has passed through the formations; and

determining the formation factor of said formations from said velocity and said porosity, said formation factor being



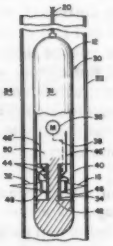
determined as proportional to the inverse of the product of said porosity and the square of said measured velocity.

4,524,433

HIGH SPEED SONIC LOGGING USING MULTIPLE TRANSDUCERS

Robert A. Broding, Tulsa, Okla., assignor to Standard Oil Company (Indiana), Chicago, Ill.

Continuation of Ser. No. 242,501, Mar. 10, 1981, abandoned.
This application Aug. 18, 1983, Ser. No. 524,487
Int. Cl.³ G01V *1/40*
U.S. Cl. 367—25 **11 Claims**



8. A method of logging a borehole in a system having a separate cable normally run at a first rate having at least a first signal channel which comprises:

(a) carrying out scanning operations around the wall of said borehole by operating at least a first and a second non-physically coincident transmit/receiver transducer subsystem means: (T/RTS) removed from each other and carried by a sonde and directing sonic energy in a radial plane around the wall of said borehole and receiving return reflected sonic energy from reflecting surfaces and producing at least a first and a second electrical scan signal representative of amplitude and transit time of reflected signals at each of a plurality of downhole locations, spaced around the wall of said borehole;

(b) delaying one of said scan signals until two scan signals obtained at a respective location and representative of amplitude and transit time of reflected signals are coincident in time;

(c) transmitting said time coincident signals representative of

amplitude and transit time of reflected signals to the surface; and

(d) recording said at least two time coinicident signals while traversing the borehole with said sonde at a second rate which is higher than said first rate.

4,524,434

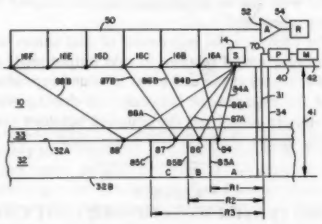
METHOD FOR DETERMINING THE AZIMUTH AND LENGTH OF A DEEP VERTICAL FRACTURE IN THE EARTH

Daniel Silverman, 5969 S. Birmingham St., Tulsa, Okla. 74105

Continuation-in-part of Ser. No. 268,787, Jun. 1, 1981, Pat. No. 4,479,204. This application Jun. 25, 1982, Ser. No. 392,146

Int. Cl.³ G01V *1/24*

U.S. Cl. 367—37 **19 Claims**



1. In a mineral recovery program in a selected geological formation in the earth in which said mineral in said formation is a first fluid, and in which a vertical hydraulic fracture has been created in said geological formation, by the injection of a selected pressurized second fluid through a borehole from the surface to said formation, the method of determining the azimuth and length of said fracture, after said fracture is formed, comprising the steps of:

(a) providing at least a first selected source of seismic waves at or near the surface of the earth, at at least one point in the vicinity of the mouth of said borehole;

(b) positioning at or near the surface of the earth an array of a plurality of seismic sensors at selected known positions, said sensors adapted to receive the upward reflection of downwardly directed seismic waves generated by said first source, and to convert them to electrical signals;

(c) after said fracture has been formed, selecting a third selected fluid such that when it is injected into said formation through said borehole and said fracture, there will be two zones, a first zone near to said fracture, having at least a different partial saturation of gas in liquid different from the fluid in the second zone farther from said fracture, which liquid was present before said injection of said third fluid;

(d) injecting said third selected fluid into said formation through said borehole and said fracture for a first selected period of time;

(e) operating said first seismic source a first time and comparing the first electrical signals from each of at least two sensors;

whereby if the two electrical signals are different, the reflections will be from different zones, the first of which has been invaded by said third fluid;

and

(f) making comparisons between many signals from many sensors to determine the shape, size and orientation of said first zone, which will be symmetrical with respect to said fracture.

4,524,435

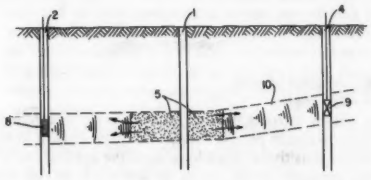
METHOD FOR DETERMINING THE DEGREE OF CHANGE OF MATERIAL PROPERTIES OF UNDERGROUND STRATA

Klaus Helbig, Zeist, Netherlands, and Güenther Püsch, Celle, Fed. Rep. of Germany, assignors to Deutsche Texaco Aktiengesellschaft, Hamburg, Fed. Rep. of Germany

Continuation of Ser. No. 879,430, Feb. 21, 1978, abandoned. This application Dec. 31, 1979, Ser. No. 108,863

Int. Cl.³ G01V *1/00, 1/14, 1/22*

U.S. Cl. 367—41 **6 Claims**



1. A method of monitoring underground processes in which changes of material properties of underground strata occur in a limited area, especially in regard to in-situ combustions, gasifications in coal and petroleum deposits, in order to localize and determine the degree of change of material properties of underground strata, comprising the steps of:

emitting an exactly reproducible time-sequential seismic signal at different times in each geological stratum where changes are expected to take place,

receiving in the appropriate geological stratum said signals for each emitting step at one or more positions,

recording the received signals,

reversing the polarity sign of the recorded signals so as to provide another record of signals of reverse sign,

stacking the records of said received signals derived from one emitting step with the records of the signals of reverse sign derived from another emitting step to provide composite records, and

determining the magnitude of the difference signals of the composite records and the propagation time of the received signals.

4,524,436

PRESSURE WAVE FIBER OPTIC TRANSDUCER CABLE

Robert L. Hall, and Lowell T. Wood, both of Houston, Tex., assignors to Schlumberger Technology Corporation, Houston, Tex.

Continuation of Ser. No. 264,248, May 15, 1981, abandoned. This application Jul. 25, 1983, Ser. No. 517,129

Int. Cl.³ G02B *5/14;* **G01H** *9/00;* **G01S** *3/80*

U.S. Cl. 367—169 **6 Claims**

1. A pressure sensor comprising:

elongate optical fiber means for affording the transmission of light over an extended length,

means for supporting said optical fiber means along length and for minimizing the stress applied to said optical fiber means that is not associated with the pressures to be sensed,

at least two ridges extending in substantially parallel fashion along the length of said supporting means and said optical

fiber is helically wound about said support means in contact with said ridges; and

said at least two ridges are spaced from one another and said optical fiber forms a helical angle with said ridges such that the distance between adjacent contacts of the optical fiber and said ridges satisfies the relationship:

$$A = \frac{R_m \theta}{\sin \alpha}$$

where

A=arc length between contacts

$$\theta = \frac{2}{\text{number of ridges}}$$

R_m=radius of core

α=lay angle;

said ridges introducing a controlled microbending of said optic means at predetermined locations chosen to increase sensor sensitivity therealong upon the application of external pressure waves, so as to introduce modal coupling within the light energy being transmitted through said optical fiber means, which coupling corresponds to the intensity and duration of such pressure waves as are to be sensed, and

a protective jacket around and in contact with said optical fiber means, said protective jacket being constructed from a material affording a transmission of pressure therethrough.

4,524,437

SIMPLIFIED SOUND-REPRODUCING DEVICE HAVING AN EXTERNAL OUTPUT SHAFT

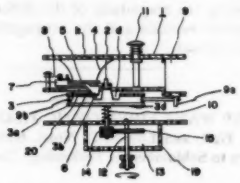
Eishi Koike, Sagamihara, Japan, assignor to Ozen Corporation, Tokyo, Japan

Filed Sep. 29, 1983, Ser. No. 536,867

Claims priority, application Japan, Jun. 24, 1983, 58-113912

Int. Cl.³ A63H *5/00, 29/00;* G11B *25/04*

U.S. Cl. 369—67 **6 Claims**



1. A simplified sound-reproducing device comprising:

a casing,

a center shaft mounted within the casing,

means for axially advancing and retracting the center shaft,

a record disc having a recorded face with starting and end points of sound reproduction, the record disc being rotatably carried by the center shaft and capable of axially advancing or retracting together with said center shaft,

a sound reproducing stylus,

a recess formed in the record disc for allowing a dropping movement thereinto of the sound-reproducting stylus,

a speaker cone tightly attached to an inner face of said casing,

a vibration transmitting member attached to the speaker cone and disposed to be confronted with the record face of said record disc,

a pickup,

a tone arm swingably mounted in the casing and at a forward end, the tone arm being normally interposed between said vibration transmitting member and said recorded face of said record disc for reciprocal movement between the starting point and end point of sound reproduction of said record disc,

a return spring normally urging said tone arm toward such directions that said pickup can move toward said starting point of sound reproduction and away from said recorded face,

a motor coupled to said record disc for driving said record disc,

a stylus force spring normally urging said record disc toward said vibration transmitting member,

a starting bar extending into said casing from outside of said casing to move said record disc against the reslient force imparted by said stylus force spring,

an output shaft projecting outside of said casing from the interior of said casing,

transmission means for coupling said output shaft with said motor via said center shaft, said transmission means comprising:

a driving wheel fixed to a portion of said center shaft and a follower wheel fixed to said output shaft and disposed in parallel with said center shaft so as to be coupled with said driving wheel and

means for causing axial movement of said center shaft and said driving wheel relative to said output shaft and said follower wheel at the end point of sound reproduction to contol the engagement between said driving wheel and said follower wheel and the coupling between said motor and said output shaft via said center shaft.

4,524,438

RECORD PLAYER WITH HINGED DUST COVER

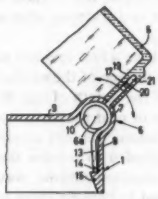
Hermanus F. Einhaus, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Mar. 16, 1984, Ser. No. 590,127

Claims priority, application Netherlands, Mar. 17, 1983, 8300959

Int. Cl.³ E05D *11/08;* G11B *17/04*

U.S. Cl. 369—75.1 **11 Claims**



1. A record player comprising a housing having an upper side, a rear, and an inner surface; a dust cover; and at least one hinge device defining a hinge axis, and connected to the dust cover and to the housing near the rear, said hinge device including a hinge coil spring arranged such that, when the dust cover is swung to an open position, the dust cover is retained in this position by the hinge spring, characterized in that

said hinge device comprises a hinge wall having an inner surface forming part of said housing inner surface, and an abutment, integral with the housing and spaced from said hinge wall inner surface and a slot formed in the housing adjacent the hinge wall, said slot extending parallel to a plane perpendicular to said hinge axis,

said housing, hinge wall and abutment are a one-piece article,

said spring comprises a first limb having an end portion, and a second limb, and

said spring is arranged such that said end portion abuts said abutment so as to urge turns of the coil of the hinge spring against the hinge wall inner surface and thereby retain said spring, said second limb projecting from the housing

through the slot and being coupled directly to the dust cover.

4,524,439

ELECTROMAGNETIC PICKUP CARTRIDGE WITH FLUX SENSORS MOUNTED ABOVE MOVING MAGNET

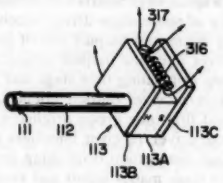
Katsuhiko Oguri, Yokohama, Japan, assignor to Victor Company of Japan, Limited, Yokohama, Japan

Continuation of Ser. No. 251,902, Apr. 7, 1981, abandoned. This application Apr. 9, 1984, Ser. No. 597,807

Claims priority, application Japan, Apr. 8, 1980, 55-45947; Apr. 10, 1980, 55-47141

Int. Cl.³ H04R *11/12*

U.S. Cl. 369—136 **2 Claims**



1. An electromagnetic pickup cartridge comprising:

a movably supported flux generating means having a pair of spaced apart parallel portions of opposite polarities for generating parallel magnetic flux lines therebetween;

a cantilever having one end thereof coupled to one of said portions such that the cantilever extends in a direction aligned with the direction of said flux lines; and

a coreless structure having a coil stationarily located between said portions, said coil being wound about an axis perpendicular to the direction of said magnetic flux lines when said flux generating means is in a neutral position for generating a signal exclusively as a function of the angular displacement of said flux generating means from said neutral position.

4,524,440

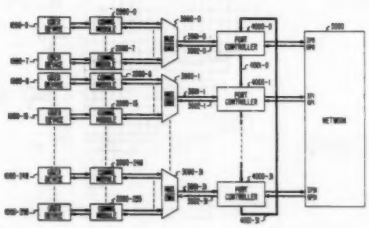
FAST CIRCUIT SWITCHING SYSTEM

Milo Orsic, Lincolnwood, Ill., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Dec. 6, 1983, Ser. No. 558,630

Int. Cl.³ H04Q *11/00, 11/04*

U.S. Cl. 370—54 **28 Claims**



1. A communications system comprising

a plurality of source channels for conveying information,

a plurality of destination channels for conveying information,

a plurality of communications modules each associated with at least one of said source channels and each comprising transmitter means for transmitting, on the at least one associated source channel, circuit setup request signals and data, each of said circuit setup request signals defining at least one of said destination channels,

a plurality of controllers each comprising storage means for storing one of a plurality of status words each defining the availability of at least one of said destination channels,

means for cycling each of said status words to the storage means of each of said controllers and

a network,

wherein each of said controllers is associated with at least one of said source channels and further comprises

means for receiving information on the at least one associated source channel and

means responsive to one of said circuit setup request signals and to subsequent data, when one of said status words cycled to the storage means of that controller defines as available one of said destination channels that is defined by that circuit setup request signal, for transmitting that circuit setup request signal and said subsequent data to said network, and

wherein said network comprises means responsive to circuit setup request signals received from said controllers for transmitting data received from said controllers to ones of said destination channels defined by those circuit setup request signals.

4,524,441

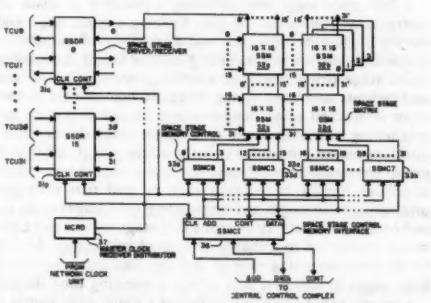
MODULAR SPACE STAGE ARRANGEMENT FOR A T-S-T DIGITAL SWITCHING SYSTEM

Nathaniel Simmons, Downers Grove, Ill.; Sergio E. Puccini, Scottsdale, Ariz.; Stig E. Magnusson, and Kamal I. Parikh, both of Phoenix, Ariz., assignors to GTE Automatic Electric Inc., Northlake, Ill.

Filed Jun. 22, 1983, Ser. No. 506,746

Int. Cl.³ H04Q *11/04*

U.S. Cl. 370—63 **5 Claims**



1. In a time-space-time network capable of expanding from one to a plurality of originating time stages and terminating time stages, a space stage comprising:

a switching matrix including a plurality of multiplexer units connected together to form a space stage matrix having a plurality of input lines and a plurality of output lines each of said plurality of multiplexer units including control inputs;

a plurality of space stage driver/receiver interfaces each space stage driver/receiver interface connecting a maximum of two originating time stages and two terminating time stages to a corresponding two of said plurality of input lines and plurality of output lines respectively of said space stage matrix;

a plurality of space stage matrix control units each of said plurality of space stage matrix control units including four control memories, each control memory associated with an individual one of said space stage matrix output lines and said multiplexer units control inputs connected to a respective space stage matrix control unit; and

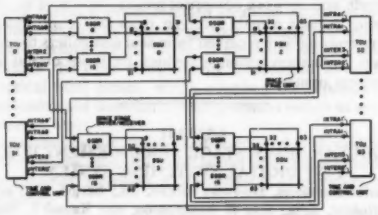
a matrix control interface connecting a central control complex to said matrix control units, said central control complex arranged to write control information to one of said control memories enabling a selected connection through said space stage from one of said plurality of originating time stages to one of said plurality of terminating time stages.

4,524,442

MODULARLY EXPANDABLE SPACE STAGE FOR A T-S-T DIGITAL SWITCHING SYSTEM

Nathaniel Simmons, Downers Grove, Ill.; Sergio E. Puccini, Scottsdale, Ariz.; Stig E. Magnusson, and Kanal I. Parikh, both of Phoenix, Ariz., assignors to GTE Automatic Electric Inc., Northlake, Ill.

Filed Jun. 22, 1983, Ser. No. 506,744
Int. Cl.³ H04Q *11/04*
U.S. Cl. 370—63 **24 Claims**



1. In a time-space-time network having a first time group including a plurality of originating time stages and a plurality of terminating time stages, and a second time group including at least one originating time stage and at least one terminating time stage, a space stage comprising:

a first space stage unit including a plurality of space stage matrix units connected together forming a space stage matrix having a plurality of inputs and a plurality of outputs, each space stage matrix unit including control inputs, a plurality of space stage driver/receiver interfaces each including inputs and outputs and each space stage driver/receiver interface input connected to a respective one of said first time group originating time stages and each space stage driver/receiver interface output connected to a respective one of said first time group terminating time stages, said space stage driver/receiver interfaces further connecting each of said first time group originating time stages and terminating time stages to an input and output respectively of said space stage matrix and control means connected to a source of control information for selectively interconnecting each of said first time group terminating time stages to said first time group originating time stages;

a second space stage unit including a space stage matrix unit having a plurality of inputs and a plurality of outputs, said space stage matrix unit including control inputs and a space stage driver/receiver interface including at least one input and output, said input connected to said second time group originating time stage and said output connected to said second time group terminating time stage, said space stage driver/receiver interface further connecting said second time group originating time stage and said second time group terminating time stage to one of said inputs and outputs of said space stage matrix unit and at least one control means connected to a source of control information for selectively interconnecting said second time group terminating time stage to said second time group originating time stage;

a third space stage unit including a plurality of space stage matrix units connected together forming a space stage matrix having a plurality of inputs and a plurality of outputs, each space stage matrix unit including control inputs, a plurality of space stage driver/receiver interfaces each including inputs and outputs and each space stage driver/receiver interface input connected to a respective one of said first time group originating time stages and one of said space stage driver/receiver interface outputs connected to said second time group terminating time stage, said space stage driver/receiver interfaces further connecting each of said first time group originating time stages to a space stage matrix input and said second time group terminating time stage to one of said space stage matrix outputs and at least one control means connected to a source of control information for selectively interconnecting at least one of said second time group terminating time stages to each of said plurality of first time group originating time stages; and

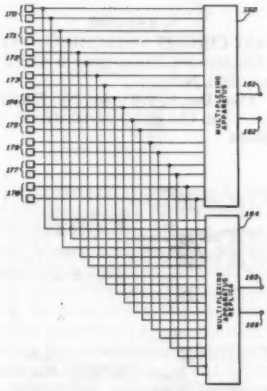
a fourth space stage unit including a plurality of space stage matrix units connected together forming a space stage matrix having a plurality of inputs and a plurality of outputs, each space stage matrix unit including control inputs, a plurality of space stage driver/receiver interfaces each including inputs and outputs one of said space stage driver/receiver interface outputs connected to said second time group originating time stage and each of said space stage driver/receiver outputs connected to a respective one of said first time group originating time stages, said space stage driver/receiver interfaces further connecting said second time group originating time stage to one of said space stage matrix inputs and each of said first time group terminating time stages to respective space stage matrix outputs and control means connected to a source of control information for selectively interconnecting each of said plurality of first time group terminating time stages to at least one of said second time group originating time stages.

4,524,443

HIGH SPEED SOLID STATE MULTIPLEXER

David R. Crocker; Desi D. Stelling, both of Phoenix, Ariz., and Francis W. Larson, Rio Rancho, N. Mex., assignors to Sperry Corporation, New York, N.Y.

Filed Dec. 22, 1983, Ser. No. 564,259
Int. Cl.³ H04J *3/04*; H04K *19/08*
U.S. Cl. 370—112 **16 Claims**



9. A multiplexing apparatus for receiving a plurality of input signals, having voltages in a predetermined range, from a plurality of input sources, and for outputting at least one input signal selected from said plurality of input signals, comprising:

a unit, including:

a first plurality of transistors, the base of each transistor in said first plurality of transistors for coupling to one of said input sources;

means for applying a predetermined voltage to the collector of each transistor in said first plurality of transistors;

a plurality of diodes, coupled, respectively, to said first plurality of transistors such that the anode of each diode is coupled to the emitter of a corresponding transistor in said first plurality of transistors;

a second plurality of transistors, coupled, respectively, to said first plurality of transistors such that the collector of each transistor in said second plurality of transistors is coupled to the emitter of a corresponding transistor in said first plurality of transistors, the collector of each transistor in said second plurality of transistors being coupled to the anode of the same diode, in said plurality of diodes, to which a corresponding transistor in said first plurality of transistors is coupled;

means for applying a predetermined voltage to the base of a selected transistor in said second plurality of transistors;

means for applying a predetermined current to the emitter of said selected transistor in said second plurality of transistors;

a third plurality of transistors, coupled, respectively, to said first plurality of transistors such that the emitter of each transistor in said third plurality of transistors is coupled to the emitter of a corresponding transistor in said first plurality of transistors, the emitter of each transistor in said third plurality of transistors being coupled to the anode of the same diode, in said plurality of diodes, to which a corresponding transistor in said first plurality of transistors is coupled;

means for applying a predetermined voltage to the collector of each transistor in said third plurality of transistors;

means for applying a predetermined voltage to the base of a selected transistor in said third plurality of transistors;

an output transistor, the base of said output transistor being coupled to the cathode of each diode in said plurality of diodes;

means for applying a predetermined voltage to the collector of said output transistor; and

means, coupled to the cathode of each diode in said plurality of diodes, for sinking a predetermined portion of said predetermined current applied to the emitter of said selected transistor in said second plurality of transistors through a diode, in said plurality of diodes, coupled to said selected transistor in said second plurality of transistors.

4,524,444

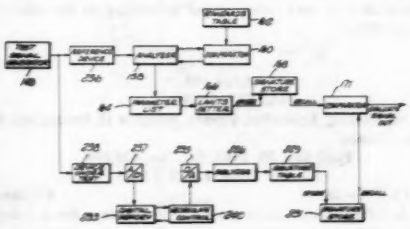
ANALYZING THE SIGNAL TRANSFER CHARACTERISTICS OF A SIGNAL PROCESSING UNIT

Edward Efron, Irvine; James O. McPherson, Newport Beach, and Young B. Kim, Long Beach, all of Calif., assignors to Discovision Associates, Costa Mesa, Calif.

Division of Ser. No. 339,011; Jan. 12, 1982,. This application Sep. 30, 1982, Ser. No. 429,351

Int. Cl.³ G01R *31/28*

U.S. Cl. 371—24 **10 Claims**



1. A method of analyzing the signal transfer characteristics of a signal processing unit comprising the steps of:

(a) establishing an input signal of known content;

(b) measuring selected parameters of selected parts of said input signal;

(c) storing the measurement results of said input signal measuring step to define a stored signature of said input signal comprising said selected parameters of selected parts of said input signal;

(d) feeding said input signal to said signal processing unit;

(e) measuring said parameters of parts of the output signal from said signal processing unit corresponding to said electrical parts of said input signal; and

(f) comparing, subsequent to said output signal measurement step, said stored selected input signature parameters with the corresponding parameters of said output signal.

4,524,445

METHOD AND CIRCUIT ARRANGEMENT FOR SYNCHRONOUS DETECTION

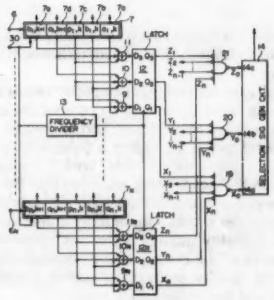
Yasuhiko Fujii, Yamato, Japan, assignor to Victor Company of Japan, Limited, Japan

Filed Oct. 14, 1982, Ser. No. 434,532

Claims priority, application Japan, Oct. 15, 1981, 56-164498

Int. Cl.³ G06F *11/10*; H04L *7/02*

U.S. Cl. 371—47 **13 Claims**



1. A method of detecting synchronism of input data blocks constituting a digital signal, where each data block comprises a plurality of data words each having "n" bits, wherein "n" is a positive integer, and a parity word generated in such a manner that each bit in said parity word is given by:

$$p_{m,k}=a_{m,k}\oplus b_{m,k}\oplus \ldots$$

wherein

$a_{m,k}$, $b_{m,k}$ . . . are bits in a single row of said plurality of data words;

m is a positive integer and $1 \leqq m \leqq n$, and

$\oplus$ indicates modulo-two summation;

said "n" bits of each word being transmitted in parallel in such a manner that said digital signal comprises "n" rows, said method comprising the steps of:

(a) storing said digital signal into a memory means in such a manner that said bits $a_{m,k}$, $b_{m,k}$ . . . $p_{m,k}$ of each row are stored according to the order of the received words;

(b) reading out from said memory means a plurality of sets forming combinations of consecutive bits, whose number equals the total number of words included in each data block, where the combination of bits in each set is different for each of the plurality of sets of bits;

(c) parity checking simultaneously in connection with said plurality of sets of bits read out from said memory means each time each word is inputted to said memory means;

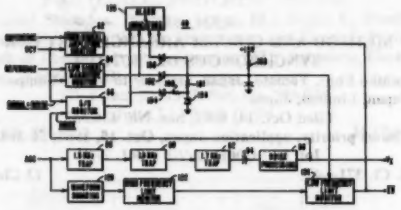
(d) detecting a state of the absence of parity error to ascertain which set of said bits does not result in parity error; and

(e) deriving a set of bits from said memory means in connection with each row in accordance with the result of the detection of the absence of parity error to output the set of bits as a single row constituting a synchronized data block.

4,524,446
SIGNAL QUALITY MONITOR FOR PROTECTIVE RELAY SYSTEM

Shan C. Sun, Coral Springs, Fla., and James P. McGivern, Plum Boro, Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jul. 13, 1982, Ser. No. 397,753
Int. Cl.³ H04L 1/20
U.S. Cl. 371—22 6 Claims



1. A monitor for monitoring the quality of a communication signal having a frequency in a predetermined frequency range, comprising:

automatic gain control (agc) amplifier means having a signal receiving input connected to receive the communication signal, a gain control input, and an output,

gain control means providing a unidirectional gain control signal for gain control input, with the magnitude of said gain control signal being responsive to the output of said agc amplifier means, to maintain the output signal of said agc amplifier means substantially constant,

and signal quality monitoring means for providing a signal indicative of the quality of the communication signal,

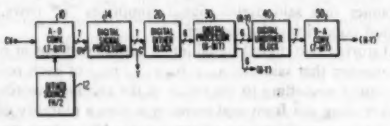
said signal quality monitoring means including reference means and first comparator means,

said first comparator means comparing the magnitude of said gain control signal with said reference means to obtain an indication of whether or not the magnitude of the communication signal is within a predetermined desired range.

4,524,447
DIGITAL SIGNAL PROCESSING APPARATUS HAVING DIGITAL DITHER

Donald H. Willis, Indianapolis, and Jack S. Fuhrer, Carmel, both of Ind., assignors to RCA Corporation, Princeton, N.J.

Filed May 25, 1983, Ser. No. 498,151
Int. Cl.³ H04N 9/50, 9/32
U.S. Cl. 375—26 22 Claims



1. Digital signal processing apparatus comprising:

a source of digital signals having N bits, where N is a positive integer;

dithering means, coupled to said source, for developing dithered digital signals having less than N bits, including first means responsive to the least significant bit of said digital signals for producing said dithered digital signals having successive conditions for successive samples of said digital signals;

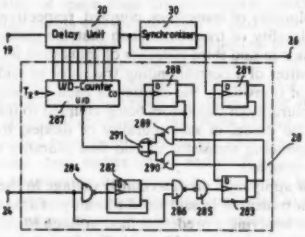
processing means, coupled to said dithering means, for digitally processing said dithered digital signals having less than N bits received at an input thereof to develop processed digital signals at an output thereof; and

combining means, coupled to said processing means, for combining successive samples of said processed digital signals to produce digital output signals.

4,524,448
VARIABLE DELAY UNIT FOR DATA SYNCHRONIZER USING PHASE-SENSITIVE COUNTER TO VARY THE DELAY

Josef Hüllwegen, Altenbeken, Fed. Rep. of Germany, assignor to Nixdorf Computer AG, Fed. Rep. of Germany

Division of Ser. No. 205,038, Nov. 7, 1980, Pat. No. 4,404,681.
This application Sep. 23, 1982, Ser. No. 422,232
Claims priority, application Fed. Rep. of Germany, Nov. 9, 1979, 2945331
Int. Cl.³ H04L 7/04
U.S. Cl. 375—118 2 Claims



1. A device for phase synchronization between the data received on one terminal and a local receiver timing pulse appearing at another terminal in a data transmission unit, including a variable delay unit having an input connected to said one terminal to receive said data, said variable delay unit also having an output, synchronizer means connected to the delay unit to recover a data timing pulse from said received data, a phase comparator for comparing the relative time-position of the data timing pulse and the time-position of the receiver timing pulse appearing at said another terminal, a source of clock signals having a constant frequency which is higher than the frequency of the timing pulses, a bidirectional counter having an input connected to continuously receive the clock pulses and for storing the phase difference between the data pulse and the receiver pulse in the form of a counter position, the phase comparator being connected to the counter to control the direction of count, said delay unit being connected to the counter to be controlled by the content therein such that the delay depends on the counter contents, whereby the relative time-position can be determined continuously and the counter contents can be correspondingly corrected upward or downward, and that the delay unit delays the transmission of received data to said delay output according to the relative time-position.

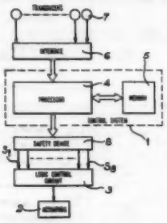
4,524,449
SAFETY DEVICE

Jean M. Colling, Echirolles, France, assignor to Framatome & Cie., France

Filed Sep. 28, 1982, Ser. No. 425,898
Int. Cl.³ G06F 11/28, 15/46
U.S. Cl. 377—28 4 Claims

1. A safety device between a control system for a safety actuator and a logic circuit for controlling said actuator, comprising sequential transmission means connected to the logic control circuit for the transmission of logic signals supplied by the control system to the logic circuit, these transmission means being connected to sequential checking means for applying to the logic circuit release signals, in the case of a failure of the control system or a failure of the transmission means, these checking means being connected to the control system,

the transmission of the signals between the system and the logic circuit taking place after checking that the transmission means have not failed, wherein the sequential checking means comprise timing means connected between the system and the transmission means, and a clock connected to timing means for controlling timing means, the transmission means applying to the logic circuit release signals in the case of a failure of the system if, after a predetermined time interval, the timing means have not recieved a rearming signal from the system, the timing means comprising a counter, whose output connected to



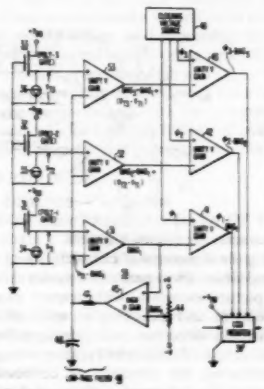
transmission means is in a first logic state during a predetermined time corresponding to the checking of the non-failure of the system and of the transmission means, and corresponding to the transmission of logic signals by the system, said output then being in a second logic state during said predetermined time interval corresponding to the time which has elapsed between the time of switching from the first logic state to the second logic state and the time at which the system applies the rearming signal to the counter, said predetermined time interval being shorter than the response time of the logic circuit.

4,524,450

AUTOMATIC ADJUSTMENT OF THE AMPLITUDES OF PLURAL-PHASE CCD CLOCKING VOLTAGES

Peter A. Levine, West Windsor, N.J., assignor to RCA Corporation, Princeton, N.J.

Filed Sep. 28, 1982, Ser. No. 426,097
Int. Cl.³ G11C *19/28*
U.S. Cl. 377—62 **3 Claims**



1. In combination:

a charge-coupled-device shift register with plural-phase clocking of sets of gate electrodes, each set in a respective successive layer of conductive material deposited over an intervening insulating layer on the surface of a semiconductor substrate;

a plurality of insulated-gate field effect transistors on the surface of the semiconductor substrate, each having a source electrode and a drain electrode, defining the ends of its conduction channel, and each having a respective gate electrode in a different one of said levels of conductive material;

biasing means connecting each of said field effect transistors, for causing each to have a prescribed level of current flow through its conduction channel, for establishing a respective offset voltage between its source and gate electrodes; and

means for generating, at least at selected times, differentially-biased clocking voltages in respective phases, for application to respective ones of said sets of gate electrodes, including

means for generating during said at least selected times clocking voltages in those phases which are uniformly biased, including

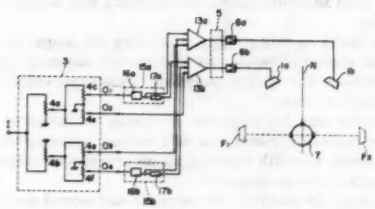
means for combining with each except a selected one of said phases of uniformly biased clocking voltages the difference between the offset voltage associated with the field effect transistor having its gate electrode in the layer of conductive material to which the selected phase of clocking voltage is applied and the offset voltage associated with the field effect transistor having its gate electrode in the layer of conductive material to which the differentially-biased clocking voltage generated by such combining is applied.

4,524,451

SOUND REPRODUCTION SYSTEM HAVING SONIC IMAGE LOCALIZATION NETWORKS

Koji Watanabe, Hirakata, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Mar. 18, 1981, Ser. No. 245,146
Claims priority, application Japan, Mar. 19, 1980, 55-35261; Jun. 19, 1980, 55-83619; Jul. 18, 1980, 55-99237; Sep. 24, 1980, 55-136530[U]; Oct. 6, 1980, 55-140324
Int. Cl.³ H04R *5/04*
U.S. Cl. 381—1 **11 Claims**

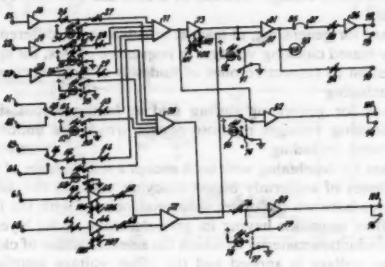


1. A sound reproducing system comprising a pair of spaced apart first and second loudspeakers, at least one sonic localization network for deriving a pair of mutually related localizing audio signals from an input audio signal and applying said localizing signals to said loudspeakers respectively to develop a sound that is perceived by a listener as emanating from a phantom source on one side of said first loudspeaker which is remote from said second loudspeaker, a plurality of potentiometers for separating said input audio signal into a set of at least three audio signals and adjusting the levels of the separated signals relative to each other, two of said separated signals being supplied to said first and second loudspeakers, respectively, said localization network being responsive to the remainder of said separated audio signals to provide localizing signals to said first and second loudspeakers, respectively, so that said phantom sound source is located within an area external to an area which lies intermediate said loudspeakers, whereby the adjustment of one or more of said potentiometers causes a sonic image produced by said phantom source to appear to move continuously with an area including said loudspeakers and said phantom sound source.

4,524,452
AUDIO MIXER/PRE-AMPLIFIER

Michael S. Marshak, 3970 Kumquat Ave., Miami, Fla. 33133

Filed Jul. 20, 1983, Ser. No. 515,459
Int. Cl.³ H04B 1/00
U.S. Cl. 381—28 7 Claims



1. A stereo pre-amplifier for mixing audio input signals comprising:

(a) a means for supplying input signals including stereo phonograph signals and stereo auxilary level signals and low impedance signals to said pre-amplifier;

(b) a means for supplying output signals from said pre-amplifier;

(c) a first summing means for combining said phonograph signals and said auxilary level signals;

(d) a second summing means for combining said low impedance signals;

(e) a cueing means for sampling said input signals prior to said signals being input to said first summing amplifier said cueing means including a means to select one or more of said input signals to be sampled;

(f) a third summing means for combining said sampled signals;

(g) a fourth summing means combining the output of said first summing means and said second summing means whereby said fourth summing means provides pre-amplifier output;

(h) a fifth summing means for combining the output of said first summing means and said second summing means whereby said fifth summing means provides an output to auxilary storage means;

(i) a means for disabling the output of said second summing means from inputing into said fifth summing means;

(j) a means for combining both stereo channels of the inputs of said fourth summing means whereby each of the output channels of said fourth summing means are monophonic signals; and

(k) a means for combining both stereo channels of the output of said third summing means whereby each of the output channels of said third summing means are monophonic signals.

4,524,453
POSTAL CODE DISTINGUISHING APPARATUS

Kazunari Egami; Tetsuo Umeda; Naoto Tsukakoshi, and Yasuo Nishijima, all of Tokyo, Japan, assignors to Nippon Electric Co., Ltd., Tokyo, Japan

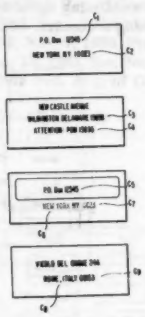
Filed Feb. 18, 1982, Ser. No. 349,938
Claims priority, application Japan, Feb. 18, 1981, 56-22557
Int. Cl.³ G06K 9/00, 9/72, 9/20
U.S. Cl. 382—1 9 Claims

1. A code distinguishing apparatus, comprising:

means for recognizing characters existing in an address description on an article, said address description including at least one word and at least one code on the same line;

means for extracting said at least one word from said characters recognized by said recognizing means;

memory means for storing at least one predetermined key word indicating the significance of a code contained on the same line as said key word;



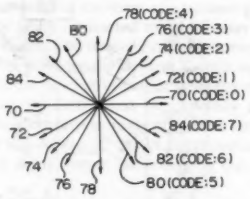
means for comparing said at least one word extracted by said extracting means with said key word stored in said memory means; and

means for determining the significance of said at least one code in response to the output delivered from said comparing means.

4,524,454
METHOD OF ASSIGNING DIRECTION CODE TO BOUNDARY PICTURE ELEMENT IN CHARACTER RECOGNITION SYSTEM

Koichi Ejiri, Narashino, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Filed Sep. 14, 1982, Ser. No. 417,962
Claims priority, application Japan, Sep. 22, 1981, 56-149822
Int. Cl.³ G06K 9/48
U.S. Cl. 382—21 5 Claims



1. In a character recognition system, a machine method of discriminating the directions of connectivity of boundary picture elements, which form part of a two-level image together with other picture elements, with respect to a plurality of primary directions and assigning to each of the boundary picture elements a direction code corresponding to the discriminated direction of connectivity, comprising the steps of:

(a) discriminating the direction of connectivity of each boundary picture element with respect to the primary directions and a plurality of secondary directions which individually neighbor the primary directions;

(b) assigning to the respective boundary picture elements direction codes which correspond to the discriminated directions of connectivity thereof;

(c) selecting boundary picture elements adjacent to boundary picture elements provided with direction codes which correspond to the primary directions, out of all the bound-

ary picture elements which are assigned with direction codes corresponding to the secondary directions; and

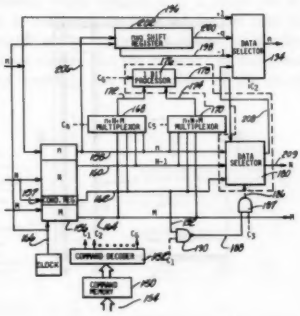
(d) converting the direction codes assigned to said selected boundary picture elements into the direction codes of the adjacent boundary picture elements corresponding to the primary directions.

4,524,455

PIPELINE PROCESSOR

Wlodzimierz Holsztynski, and Stephen S. Wilson, both of Ann Arbor, Mich., assignors to Environmental Research Inst. of Michigan, Ann Arbor, Mich.

Filed Jun. 1, 1981, Ser. No. 269,143
Int. Cl.³ G06K 9/36
U.S. Cl. 382—41 **21 Claims**



1. A system for serially processing spatially oriented data, comprising

a plurality of serially connected processing cells each including a multi-bit memory haing a data input for receiving an N-bit data word from another of said cells, a data output and a control input, and means coupled with said data output of said memory for temporarily storing data output from said memory,

each of said cells further including a processing circuit for operating on selected bits of said data word, said processing circuit having a first input connected with the data output of said memory and a second input connected with said data storing means, said processing circuit having a data output connected with the data input of the neighboring downstream processing cell; and

selecting means operably coupled with the control input of each of the memories and with the processing circuit of each of said cells for selecting the bits of said data word to be operated upon by said processing circuit.

4,524,456

METHOD FOR COMPRESSING DATA OF TWO-VALUE PICTURE IMAGE

Shuichi Araki, and Hideshi Hashiyama, both of Kyoto, Japan, assignors to Dainippon Screen Seizo Kabushiki Kaisha, Kyoto, Japan

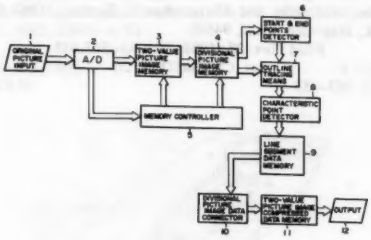
Filed Nov. 10, 1982, Ser. No. 440,559
Claims priority, application Japan, Nov. 11, 1981, 56-180649
Int. Cl.³ G06K 9/36
U.S. Cl. 382—56 **2 Claims**

1. A method for compressing data of two-value picture image, comprising the steps of:

(a) storing an original picture image as electric signals in a memory partitioned into a plurality of regions bounded by sets of division lines for receiving divisional picture images, said sets being perpendicular to one another and each set comprising a plurality of lines;

(b) detecting stored electric signals designating intersections between the division lines and outlines of a character area of each divisional picture image, individual ones of said electric signals being found as start and end points of segments of the character outlines;

(c) comparing electric signals designating coordinate values of one part of a character outline with signals designating coordinate values of the locations of changes in slope,



such locations being characteristic points; tracing the outlines of the character area of each divisional picture image from the start points to the end points; and

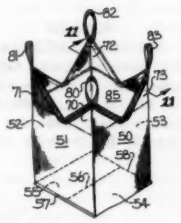
(d) imaging the outlines of the character areas of the adjacent divisional picture images at the start and the end points.

4,524,457

CARGO BAG WITH REINFORCED TRIANGULAR LIFTING PANELS

Frank J. Marino, Hialeah, Fla., assignor to Marino Technologies, Inc., Hialeah, Fla.

Filed Apr. 30, 1984, Ser. No. 605,110
Int. Cl.³ B65D 33/06, 88/16
U.S. Cl. 383—17 **4 Claims**



1. A cargo bag of flexible material for transportation and storage of bulk material and including four upstanding side walls, a bottom, and an upper filling opening, said cargo bag being characterized by four triangular lifting panels formed integrally with and extending upwardly from the upper edge of said side walls, said triangular lifting panels each including wide lower ends, inwardly tapering sides, and substantially pointed upper ends, said substantially pointed upper end of each of said triangular lifting panels being positioned above a corresponding corner of said cargo bag, said wide lower ends of each of said triangular lifting panels being integrally joined with and extending upwardly in substantial alignment with half of the upper edges of two adjacent side walls, and lifting loop means supported by said lifting panels for supporting and moving said cargo bag from one location to another whereby said triangular lifting panels serve to distribute the weight of the material over the width of all of said side walls when said cargo bag is lifted by said lifting loop means, wherein said lifting loop means comprises strap web material extending along and secured to the inwardly tapering sides of said triangular lifting panels, and said strap web material extending up-

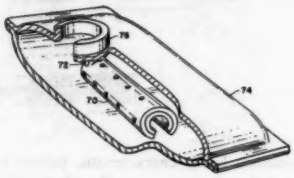
wardly from the substantially pointed upper end of each of said triangular lifting panels and forming a lifting loop thereabove.

4,524,458

MOISTURE RESPONSIVE STIFFENING MEMBERS FOR FLEXIBLE CONTAINERS

Robert G. Pongrass, 122 Ocean St., Woollahra 2025, New South Wales, Australia, and Christopher C. Rutter, 21063 Cabot Blvd., Hayward, Calif. 94545

Filed Nov. 25, 1983, Ser. No. 555,045
Int. Cl.³ B65D *19/20*
U.S. Cl. 383—33 10 Claims



1. In combination with a flexible packaging bag having first and second surfaces interconnected at the peripheries thereof, anticlosure means within said bag for preventing entrapment of portions of the bag contents in folds in said bag and by stoppage of a dispensing aperture in said bag as said flexible bag collapses during dispensing of the contents therefrom, said anticlosure means comprising:

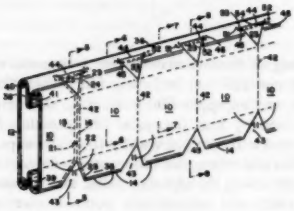
a thin elongated stiffening member having one end attached to an inner surface of the flexible bag and near the position of a dispensing aperture in said bag, the long axis of said stiffening member being substantially parallel with the longer axis of said bag, said stiffening member being flexible when dry and becoming stiffened by exposure to moisture.

4,524,459

SQUARE ENDED BAG

Oliver R. Titchenal, North Ridgeville, Ohio, assignor to Basic Packaging Systems, Inc., Avon Lake, Ohio

Division of Ser. No. 301,762, Sep. 14, 1981, Pat. No. 4,453,370. This application Jun. 8, 1984, Ser. No. 618,513
Int. Cl.³ B65D *30/20, 30/00*
U.S. Cl. 383—37 14 Claims



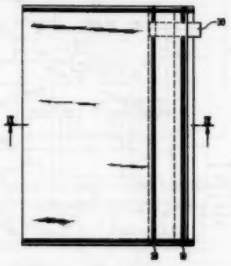
1. In a chain of open mouth square ended bags constructed from an elongated band with each of said bags being defined by front and back walls, top and bottom ends, and fore and aft seal sides with each said seal side consisting of portions of said band extending from each said wall and end and sealed together by a side seal, each said seal side being breakably joined to the nearest seal side of the next adjacent bag in the chain, and elongated longitudinal strip means of said band located along the back walls and the top ends of all the bags and at least partially aligning the respective back wall and top end of each bag, the provision of each said bag having its back wall and top end sealed together with a closing seal leg extending from each seal side towards the opposite seal side a distance less than half the distance between the seal sides and defining therebetween an open mouth through which the bag may be filled from the top and between the back wall and top end.

4,524,460

VALVED SACK

Karl-Heinz Twiehoff, Rheine, and Reinhard Nowag, Georgsmarienhütte, both of Fed. Rep. of Germany, assignors to Windmoller & Holscher, Lengerich, Fed. Rep. of Germany

Filed Feb. 13, 1984, Ser. No. 579,710
Claims priority, application Fed. Rep. of Germany, Feb. 14, 1983, 3305087; Apr. 11, 1983, 3312925
Int. Cl.³ B65D *30/24*
U.S. Cl. 383—45 15 Claims



1. A valved sack comprising:

a web of thermoplastic film,

a first marginal zone defined by the web including a marginal strip, said marginal strip having a thickness less than the thickness of the remainder of said web,

a second marginal zone defined by the web, said first marginal zone being laterally opposed to said second marginal zone,

a tube section formed by said second marginal zone overlapping said first marginal zone,

a top weld seam,

a bottom weld seam, said top weld seam and said bottom weld seam extending transversely across said tube section to form said valved sack,

a longitudinal weld seam joining said first marginal zone and said second marginal zone, one end of the longitudinal weld seam terminating spaced from said top weld seam, and

a valve passage defined between the top weld seam and the end of the longitudinal weld seam spaced from the top weld seam, said valve passage being bounded by said second marginal zone and said marginal strip, said marginal strip bounding said valve passage being of reduced thickness for resiliently sealing said sack after said sack is filled through said filling valve passage.

4,524,461

HELMET-SUPPORTED RADIO TRANSCEIVER AND BROADCAST RECEIVER SYSTEM

Raymond G. Kostanty, Wood-Ridge, N.J.; Michael Sciabbarasi, New York, N.Y., and Walter B. Grossman, Fair Lawn, N.J., assignors to American Transceiver Corp., Fair Lawn, N.J.

Filed Jul. 18, 1983, Ser. No. 514,843
Int. Cl.³ H04B *1/46*
U.S. Cl. 455—79 13 Claims

1. A helmet-supported radio transceiver and radio receiver system, comprising:

a flexible, relatively resilient housing having a plurality of interconnected modules, and supported by the helmet;

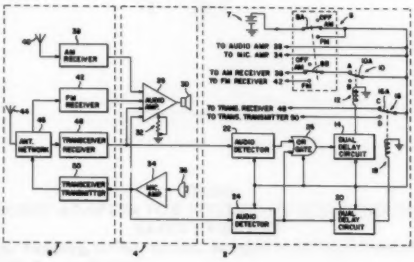
radio receiver means disposed within the modules and normally enabled for receiving radio broadcasts;

radio transceiver means disposed within the modules for transmitting and receiving messages to and from a remote station, the receiver of the radio transceiver means being normally enabled and the transmitter thereof being normally disabled;

circuit means including power supply means disposed within the modules and connected to the radio receiver means and to the transceiver means;

the circuit means being responsive to messages received through the receiver of the transceiver means for disabling the radio receiver means so that said received messages are heard by a user against a background of silence;

the circuit means being operative in a mode so as to be responsive to messages transmitted by the user through the transmitter of the transceiver means for disabling the radio receiver means and the receiver of the transceiver means, and enabling the transmitter of the transceiver



means so that the messages are transmitted to the remote station; and

said circuit means including means responsive to the messages received through the receiver of the transceiver means for disabling the radio receiver means after a first predetermined interval and for maintaining said radio receiver means disabled for a second predetermined interval after the received message ends, means operative in one mode and responsive to messages transmitted by the user through the transmitter of the transceiver means for disabling the radio receiver means and the receiver of the transceiver means and for enabling the transmitter of the transceiver means after a third predetermined interval, and for maintaining the transmitter of the transceiver means enabled for a fourth predetermined interval after the transmitted messages end, and means for enabling the radio receiver means after the transmission and reception of messages through the transmitter and the receiver of the transceiver means, respectively, have been absent for a fifth predetermined interval.

4,524,462

SYSTEM FOR JOINTLY TRANSMITTING HIGH-FREQUENCY AND LOW-FREQUENCY DIGITAL SIGNALS OVER A FIBER-OPTICAL CARRIER

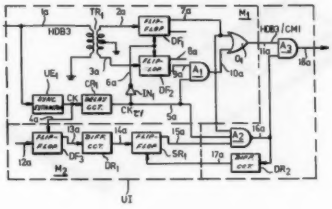
Ezio Cottatelucci, Milan, Italy, assignor to Italtel Societa Italiana Telecomunicazioni S.p.A., Milan, Italy

Continuation-in-part of Ser. No. 507,830, Jun. 24, 1983,. This application Aug. 17, 1983, Ser. No. 524,024

Claims priority, application Italy, Jun. 24, 1982, 22043 A/82; Oct. 27, 1982, 23956 A/82

Int. Cl.³ H04B *9/00*

U.S. Cl. 455—608 **9 Claims**



1. A system for jointly forwarding high-frequency and low-frequency digital signals over a physical carrier linking a transmitting station with a receiving station, comprising:

a first data source at said transmitting station emitting a terntary representation of a primary bit stream;

a second data source at said transmitting station emitting a secondary bit stream with a cycle length substantially greater that that of said primary bit stream;

transcoding means interposed at said transmitting station between said data sources and said physical carrier for converting said ternary representation into a binary configuration of twice the bit rate thereof with three out of four possible two-bit combinations symbolizing respective levels "+1", "−1" and "0" of said ternary representation, said transcoding means substituting a bit pair constituting the fourth of said two-bit combinations for at least one of the two first-mentioned combinations in said binary configuration in response to the presence of a logical "1" in said secondary bit stream;

decoding means at said receiving station coupled to said physical carrier for detecting said bit pair in an incoming pulse train emitted by said transcoding means;

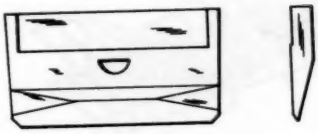
timing means at said receiving station coupled to said decoding means for determining the cycle length of said secondary bit stream from recurrences of said bit pair in said incoming pulse train;

first output means at said receiving station coupled to said decoding means for generating a replica of said primary bit stream from said incoming pulse train; and

second output means at said receiving station coupled to said decoding means and to said timing means for reconstructing said secondary bit stream from the recurrences of said bit pair.

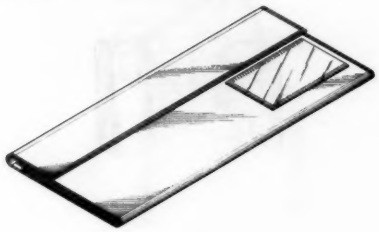
279,230
NOVELTY HAT
Tracie L. R. Talany, 330 Bainbridge St., Apt. 11, Philadelphia, Pa. 19147
Filed Mar. 18, 1983, Ser. No. 477,691
Term of patent 14 years
U.S. Cl. D2—251

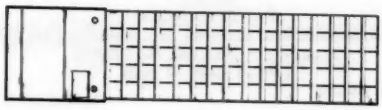
279,231
POCKET ADAPTER FOR FITTING AN ACCESORY TO A SAFETY HELMET
Arne Hellberg, Gråbo, Sweden, assignor to Hellberg Protection AB, Lerum, Sweden
Filed Dec. 22, 1982, Ser. No. 452,033
Term of patent 14 years
U.S. Cl. D2—260



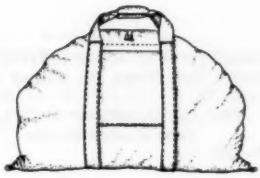
279,232
ATHLETIC SHOE
Robert J. Gamm, St. Louis County, Mo., assignor to Kangaroos U.S.A., Inc., St. Louis, Mo.
Filed Dec. 13, 1982, Ser. No. 449,412
Term of patent 14 years
U.S. Cl. D2—309

279,233
SLIDE HOLDER
Stanley Z. Feingold, and Irene B. Feingold, both of 355 Warren Ave., Rochester, N.Y. 14618
Filed Jan. 7, 1983, Ser. No. 456,528
Term of patent 14 years
U.S. Cl. D3—35

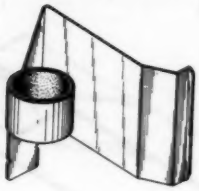




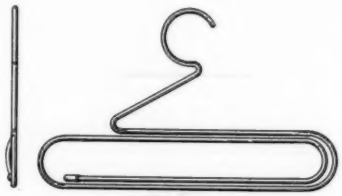
279,234
CARRYING BAG FOR WADER'S BOOTS
Robert A. Heine, P.O. Box 28562, St. Louis, Mo. 63141
Filed Dec. 8, 1982, Ser. No. 447,889
Term of patent 14 years
U.S. Cl. D3—38



279,235
CONTAINER AND MANUAL HOLDER FOR MOUNTING IN A TRACTOR CAB
Robert Langland, R.R. #1, Bingham Lake, Minn. 56118
Filed Dec. 20, 1982, Ser. No. 451,272
Term of patent 14 years
U.S. Cl. D3—40



279,236
PANTS HANGER
George J. Kupchik, 6803 Archmere Ave., Brooklyn, Ohio 44144
Filed Nov. 9, 1983, Ser. No. 549,898
Term of patent 14 years
U.S. Cl. D6—317



279,237
COMBINED SEAT AND PARTITION UNIT
Robert Balonick, Lake Forest, Ill., assignor to Marden Mfg. Inc., Chicago, Ill.
Filed Jun. 23, 1982, Ser. No. 391,109
Term of patent 14 years
U.S. Cl. D6—335

279,238
WORK STOOL
Irwin J. Ferdinand, Glencoe; Milton E. Handler, Northbrook; Richard Sylvan, Glenview, and Michael Peterson, Evanston, all of Ill., assignors to Hirsh Company, Skokie, Ill.
Filed Nov. 22, 1983, Ser. No. 554,308
Term of patent 14 years
U.S. Cl. D6—350

279,239
CHAISE LONGUE
Richard Meier, New York, N.Y., assignor to Knoll International, Inc., New York, N.Y.
Filed Sep. 15, 1982, Ser. No. 418,476
Term of patent 14 years
U.S. Cl. D6—361

279,240
CHAISE LOUNGE FRAME
Thomas E. Jernigan, 3132 N. Woodridge Rd., Birmingham, Ala. 35223
Filed Sep. 30, 1982, Ser. No. 429,429
Term of patent 14 years
U.S. Cl. D6—361

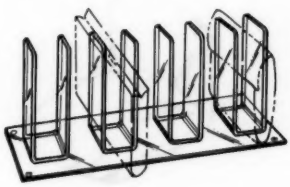
279,241
CHAIR
Niels Diffrient, New York, N.Y., assignor to Knoll International, Inc., New York, N.Y.
Division of Ser. No. 85,852, Oct. 18, 1979, , which is a continuation-in-part of Ser. No. 47,121, Jun. 11, 1979, , which is a continuation-in-part of Ser. No. 904,327, May 3, 1978,. This application Mar. 2, 1984, Ser. No. 585,904
Term of patent 14 years
U.S. Cl. D6—366

279,242
SEAT FRAME
Thomas E. Jernigan, 3132 North Woodridge Rd., Birmingham, Ala. 35223
Filed Sep. 30, 1982, Ser. No. 429,428
Term of patent 14 years
U.S. Cl. D6—370

279,243
CHAIR
Robert D. Vanderminden, Court St., Granville, N.Y. 12832
Filed Mar. 31, 1983, Ser. No. 480,749
Term of patent 14 years
U.S. Cl. D6—370

279,244
CHAIR
Gregory D. Bergquist, Mountain Brook, Ala., assignor to Meadowcraft Inc., Birmingham, Ala.
Filed Mar. 16, 1983, Ser. No. 475,907
Term of patent 14 years
U.S. Cl. D6—376

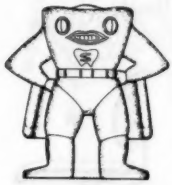
279,245
PURSE HOLDER
Marylin Wohlman, 7367 Radcliffe, West Bloomfied, Mich. 48033
Filed Dec. 13, 1982, Ser. No. 449,303
Term of patent 14 years
U.S. Cl. D6—467



279,246
COMBINED SEAT AND BACKREST UNIT
Edsel E. Murry, Christiana, Tenn., assignor to Samsonite Corporation, Denver, Colo.
Filed May 27, 1982, Ser. No. 382,654
Term of patent 14 years
U.S. Cl. D6—501

279,247
COMBINED SEAT AND BACKREST UNIT
Edsel E. Murry, Christiana, Tenn., assignor to Samsonite Corporation, Denver, Colo.
Filed May 27, 1982, Ser. No. 382,794
The portion of the term of this patent subsequent to Jun. 18, 1999, has been disclaimed.
Term of patent 14 years
U.S. Cl. D6—501

279,248
TOOTHBRUSH HOLDER
Gloria D. Oliver, 8918 Winding River, Houston, Tex. 77088
Filed Dec. 27, 1983, Ser. No. 565,390
Term of patent 14 years
U.S. Cl. D6—534



279,249
WALL MOUNTED SHELF OR SIMILAR ARTICLE
Stephen A. Fausel, 2680 S. Main St., Burlington, Iowa 52601
Filed Nov. 3, 1982, Ser. No. 438,467
Term of patent 14 years
U.S. Cl. D6—570

279,250

COMBINED TUMBLER AND DRINKING TUBE

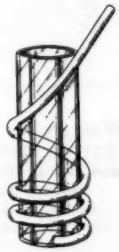
Richard D. Holloway, 02, London, England, assignor to Saltwater International Limited, New York, N.Y.

Filed Jul. 16, 1982, Ser. No. 398,976

Claims priority, application United Kingdom, Apr. 15, 1982, 1006183

Term of patent 14 years

U.S. Cl. D7—6



279,251

COVERED FOOD STORAGE CONTAINER OR THE LIKE

Robert H. C. M. Daenen, Hekelgem, Belgium, and Rino Conti, Stoughton, Mass., assignors to Dart Industries Inc., Northbrook, Ill.

Filed Aug. 10, 1982, Ser. No. 406,796

Term of patent 14 years

U.S. Cl. D7—79

279,252

FOOD STORAGE CONTAINER OR THE LIKE

Robert H. C. M. Daenen, Hekelgem, Belgium, and Rino Conti, Stoughton, Mass., assignors to Dart Industries Inc., Northbrook, Ill.

Filed Aug. 10, 1982, Ser. No. 406,797

Term of patent 14 years

U.S. Cl. D7—79

279,253

FOOD STORAGE CONTAINER OR THE LIKE

Robert H. C. M. Daenen, Hekelgem, Belgium, and Rino Conti, Stoughton, Mass., assignors to Dart Industries Inc., Northbrook, Ill.

Filed Aug. 10, 1982, Ser. No. 406,850

Term of patent 14 years

U.S. Cl. D7—79

279,254

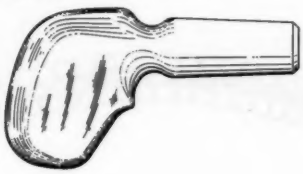
HAND GRIP FOR HAND TOOLS

Lloyd T. Smith; Loren E. Berry; Glen W. Ediger, all of Newton; Thomas E. Hindman, and Richard E. Ten Eyck, both of Wichita, all of Kans., assignors to Fiskars Manufacturing Corporation, Wausau, Wis.

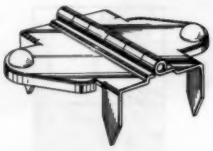
Filed May 31, 1983, Ser. No. 499,546

Term of patent 14 years

U.S. Cl. D8—107



279,255
HINGE
Leo T. Roy, South Attleboro, Mass., assignor to Craft, Inc., South Attleboro, Mass.
Filed Jan. 12, 1983, Ser. No. 457,503
Term of patent 14 years
U.S. Cl. D8—327

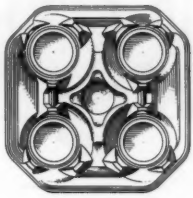


279,256
COMBINED BOTTLE AND CAP
Milan Lang, Longueuil, Canada, assignor to Atlantic Promotions, Inc., Longueuil, Canada
Filed Sep. 3, 1982, Ser. No. 414,873
Claims priority, application Canada, Aug. 4, 1982, 04-08-82-6
Term of patent 14 years
U.S. Cl. D9—337

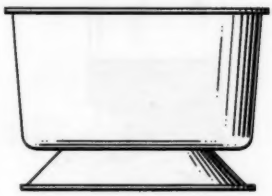
279,257
COMBINED COSMETIC CONTAINER AND APPLICATOR
Ted I. Kingsford, Memphis, Tenn., assignor to Plough, Inc., Memphis, Tenn.
Filed Oct. 21, 1982, Ser. No. 435,821
Term of patent 14 years
U.S. Cl. D9—338

279,258
DISPENSING CONTAINER FOR PILLS OR THE LIKE
H. Edward Curtis, Perkasie, Pa., assignor to American Home Products Corporation, New York, N.Y.
Filed Aug. 23, 1982, Ser. No. 410,675
Term of patent 14 years
U.S. Cl. D9—339

279,259
CARRIER FOR BEVERAGE CUPS
Kenneth D. Bixler, Huntington, and Robert E. Ralphs, Katonah, both of N.Y., assignors to Packaging Corporation of America, Evanston, Ill.
Filed Jan. 12, 1983, Ser. No. 457,544
Term of patent 14 years
U.S. Cl. D9—341

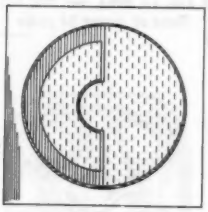


279,260
PACKAGING CUP WITH A PEDESTAL BASE
Vincent E. Fortuna, Huntington Beach, Calif., assignor to Cosden Technology, Inc., Dallas, Tex.
Filed Oct. 15, 1982, Ser. No. 434,456
Term of patent 14 years
U.S. Cl. D9—349



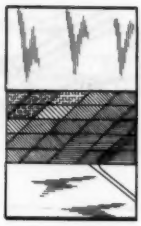
279,261
BOTTLE
Dutro Blocksom, and John C. DuPree, both of Cincinnati, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio
Filed Aug. 27, 1982, Ser. No. 412,354
Term of patent 14 years
U.S. Cl. D9—386

279,262
CARTON
Serge Mansau, Neuilly sur Seine, France, assignor to American Cyanamid Company, Stamford, Conn.
Filed Jun. 18, 1982, Ser. No. 389,810
Term of patent 14 years
U.S. Cl. D9—423



279,263
PACKING BOX FOR VIDEO CASSETTES
Masumi Ujiie, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan
Filed Jan. 19, 1983, Ser. No. 459,201
Claims priority, application Japan, Jul. 19, 1982, 57-32633
Term of patent 14 years
U.S. Cl. D9—432

279,264
PACKING BOX FOR VIDEO CASSETTES
Masumi Ujiie, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan
Filed Jan. 19, 1983, Ser. No. 459,202
Claims priority, application Japan, Jul. 19, 1982, 57-32632
Term of patent 14 years
U.S. Cl. D9—432

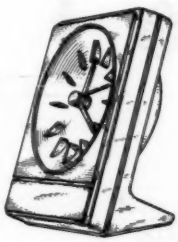


279,265
END CLOSURE FOR A CONTAINER
Timothy L. Turner, Crystal Lake, and Frank R. Pileggi, Bridgeview, both of Ill., assignors to National Can Corporation, Chicago, Ill.
Filed Apr. 14, 1982, Ser. No. 368,080
Term of patent 14 years
U.S. Cl. D9—438

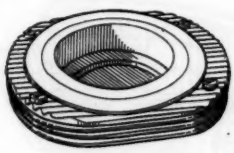
279,266
LID ASSEMBLY FOR CONTAINERS OR THE LIKE
Tord G. I. Johansson, Heimdalsgatan 35, 261 62 Glumslöv, Sweden
Filed Jun. 16, 1983, Ser. No. 505,074
Claims priority, application Sweden, Apr. 11, 1983, 82-2999
Term of patent 14 years
U.S. Cl. D9—450

279,267
COMBINED REVERSIBLE CHILD RESISTANT CLOSURE AND SCREW CAP FOR CONTAINERS
Glenn H. Morris, Chattanooga, Tenn., assignor to Brockway Plastics, Inc., Chattanooga, Tenn.
Filed Feb. 9, 1983, Ser. No. 465,322
Term of patent 14 years
U.S. Cl. D9—454

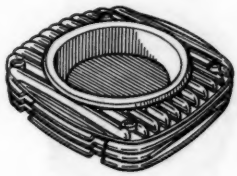
279,268
TABLE CLOCK
Walter Henkels, Holunderweg 1, D-5142 Hückelhoven, Fed. Rep. of Germany
Filed Jun. 27, 1983, Ser. No. 508,200
Claims priority, application Fed. Rep. of Germany, Feb. 16, 1983, MR 144
Term of patent 14 years
U.S. Cl. D10—26



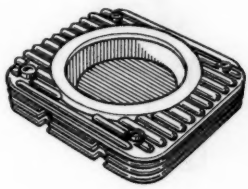
279,269
CASE FOR WRISTWATCH
Eric Bouille, c/o Société Anonyme G.&E. Bouille, Monruz 17, CH-2000 Neuchatel, Switzerland
Filed Jan. 17, 1983, Ser. No. 458,332
Term of patent 14 years
U.S. Cl. D10—30



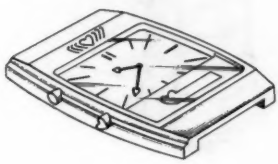
279,270
CASE FOR WRISTWATCH
Eric Bouille, c/o Société Anonyme G.&E. Bouille, Monruz 17, CH-2000 Neuchatel, Switzerland
Filed Jan. 17, 1983, Ser. No. 458,336
Claims priority, application Hague, Jul. 21, 1982, 72523
Term of patent 14 years
U.S. Cl. D10—30



279,271
CASE FOR WRISTWATCH
Eric Bouille, c/o Societe Anonyme G.&E. Bouille, Monruz 17, CH-2000 Neuchatel, Switzerland
Filed Jan. 17, 1983, Ser. No. 458,337
Term of patent 14 years
U.S. Cl. D10—30

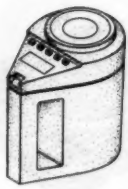


279,272
WATCH
Ronald W. Sharpe, 9465 Wilshire Blvd., Beverly Hills, Calif. 90212
Filed Feb. 18, 1983, Ser. No. 467,660
Term of patent 14 years
U.S. Cl. D10—33



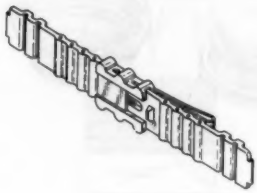
279,273
WRISTWATCH
Giorgetto Giugiaro, Trofarello, Italy, assignor to Kabushiki Kaisha Hattori Seiko, Tokyo, Japan
Filed Jun. 29, 1983, Ser. No. 509,187
Claims priority, application Japan, Jan. 20, 1983, 58-1956
Term of patent 14 years
U.S. Cl. D10—38

279,274
GRAIN MOISTURE TESTER
Eisaku Emori, Tokyo, Japan, assignor to Kett Electric Laboratory, Tokyo, Japan
Filed Apr. 14, 1983, Ser. No. 485,078
Claims priority, application Japan, Mar. 3, 1983, 58-8397
Term of patent 14 years
U.S. Cl. D10—56



279,275
TRAFFIC CONTROL DRUM
Milton T. Cory, Gastonia, N.C., assignor to Radiator Specialty Company, Incorporated, Charlotte, N.C.
Filed Dec. 5, 1983, Ser. No. 558,751
Term of patent 14 years
U.S. Cl. D10—109

279,276
WATCH BAND
Jiro Matsuo, Tokyo, Japan, assignor to Citizen Watch Co., Ltd., Tokyo, Japan
Filed Aug. 24, 1983, Ser. No. 526,146
Claims priority, application Japan, Jun. 23, 1983, 58-27179
Term of patent 14 years
U.S. Cl. D11—4



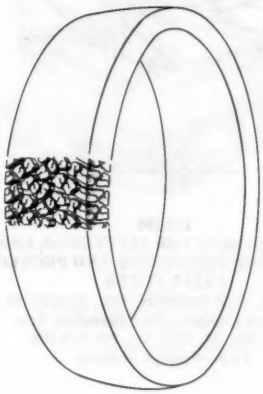
279,277
SNOWFLAKE PIN
Julia Andrus, Salt Lake City, Utah, assignor to Authentica, Inc., Salt Lake City, Utah
Filed Nov. 10, 1982, Ser. No. 440,583
Term of patent 14 years
U.S. Cl. D11—44

279,278
AQUATIC PLANT CONTAINER
Kenneth W. Pink, Unit 36, Middlefields Industrial Estate, Sandy, Bedfordshire SG19 1JZ, England
Filed Aug. 24, 1983, Ser. No. 526,091
Term of patent 14 years
U.S. Cl. D11—143

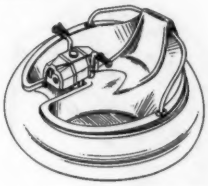
279,279
FLORAL CONTAINER
Curtis D. Wagner, Houston, Tex., assignor to Curtis Wagner Co., Inc., Houston, Tex.
Filed Oct. 24, 1983, Ser. No. 544,581
Term of patent 14 years
U.S. Cl. D11—143

279,280
COMBINED FLOWER HOLDER AND CANDY CONTAINER
Lynda Rae Resnick, Beverly Hills, Calif., assignor to Teleflora, Inc., Los Angeles, Calif.
Filed Apr. 13, 1983, Ser. No. 484,478
Term of patent 14 years
U.S. Cl. D11—146

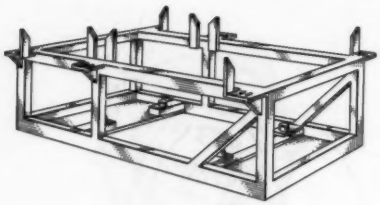
279,281
PNEUMATIC TIRE TREAD AND BUTTRESS
John A. Hutz, Orchard Lake, Mich., assignor to Uniroyal, Inc., Middlebury, Conn.
Filed Aug. 16, 1983, Ser. No. 523,803
Term of patent 14 years
U.S. Cl. D12—149



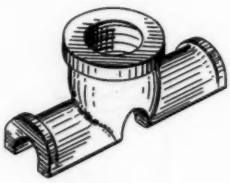
279,282
MOTORIZED BUMPER BOAT
Ralph V. Ball, Laguna Niguel, and James E. Drake, El Cajon, both of Calif., assignors to J&J Recreation, Inc., San Juan Capistrano, Calif.
Filed Nov. 15, 1982, Ser. No. 441,728
Term of patent 14 years
U.S. Cl. D12—307



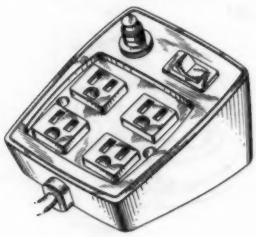
279,283
POWER SUPPLY SUPPORT FRAME
John Tate, 17285 Gehricke Rd., Sonoma, Calif. 95476
Filed May 3, 1982, Ser. No. 373,982
Term of patent 14 years
U.S. Cl. D13—11



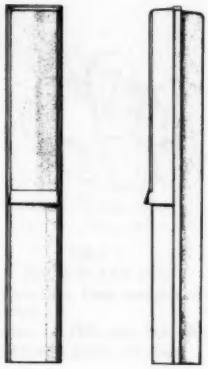
279,284
COMBINED HOUSING FOR ELECTRICAL CABLE TO POWER SOURCE CONNECTOR AND PROTECTIVE CABLE COVER
Kenneth C. Miller, New Braunfels, Tex., assignor to Leavines Electrical Tracing Company, New Braunfels, Tex.
Filed Sep. 24, 1982, Ser. No. 423,108
Term of patent 14 years
U.S. Cl. D13—24



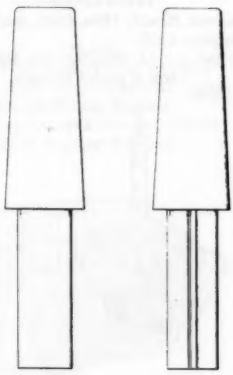
279,285
COMBINED MULTI-OUTLET BOX WITH MASTER SWITCH AND PROTECTIVE COVER THEREFOR
Frederic W. Schwartz, Providence, R.I., assignor to Cable Electric Products, Inc., Providence, R.I.
Filed Apr. 19, 1982, Ser. No. 369,698
Term of patent 14 years
U.S. Cl. D13—30



279,286
CABLE PEDESTAL CLOSURE OR SIMILAR ARTICLE
Arnold R. Smith, Chester, N.J., assignor to AT&T Bell Laboratories, Murray Hill, N.J.
Filed Nov. 8, 1982, Ser. No. 439,885
Term of patent 14 years
U.S. Cl. D13—40



279,287
CABLE PEDESTAL CLOSURE OR SIMILAR ARTICLE
Arnold R. Smith, Chester, N.J., assignor to AT&T Bell Laboratories, Murray Hill, N.J.
Filed Nov. 8, 1982, Ser. No. 439,886
Term of patent 14 years
U.S. Cl. D13—40

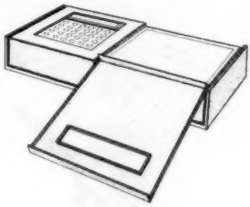


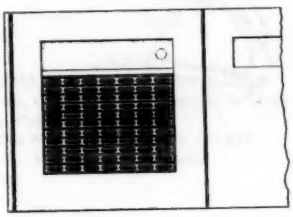
279,288

HOUSING FOR AN AUTOMATIC DIALING TELEPHONE SET OR SIMILAR ARTICLE

Arlan K. Andrews, Sr., Indianapolis; Francis S. Doyle, Oaklandon, both of Ind., and John N. McGarvey, Drexel Hill, Pa., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Dec. 20, 1982, Ser. No. 450,969
Term of patent 14 years
U.S. Cl. D14—52



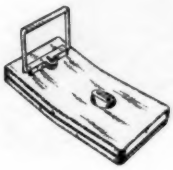


279,289

HANDSET TELEPHONE BASE

Ghanshyam A. Bhat, Marlboro, N.J.; Eric P. P. Chan, New York, N.Y.; John S. Lamancusa, Middletwon, N.J.; Gordon E. Sylvester, Jamaica, N.Y., and Jose R. Varela, Middletown, N.J., assignors to AT&T Information Systems, Holmdel, N.J.

Filed Jun. 5, 1984, Ser. No. 617,517
Term of patent 14 years
U.S. Cl. D14—60

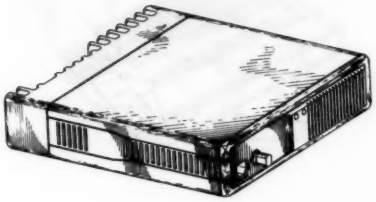


279,290

VEHICULAR TWO-WAY RADIO OR SIMILAR ARTICLE

Albert L. Nagele, Wilmette, Ill., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Mar. 18, 1983, Ser. No. 471,415
Term of patent 14 years
U.S. Cl. D14—68

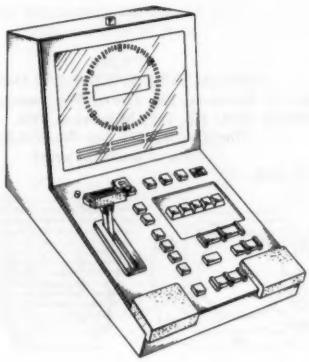


279,291

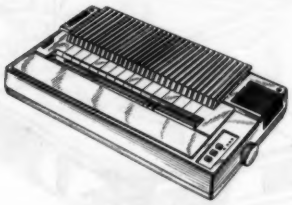
CONTROL CONSOLE FOR A VIDEOTAPE RECORDER REMOTE CONTROLLER

Thomas K. Ueda, Foster City, Calif., assignor to Sony Corporation, Tokyo, Japan

Filed Apr. 18, 1983, Ser. No. 485,600
Term of patent 14 years
U.S. Cl. D14—77

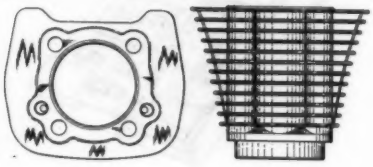


279,292
ELECTRONIC PRINTER
Naoyuki Maruyama, Shiojiri, Japan, assignor to Epson Corporation and Kabushiki Kaisha Suwa Seikosha, both of Tokyo, Japan
Filed Aug. 19, 1983, Ser. No. 524,622
Claims priority, application Japan, Feb. 24, 1983, 58-7312
Term of patent 14 years
U.S. Cl. D14—111



279,293
WINDMILL
Richard K. Sutz, Scottsdale, Ariz., assignor to Wind Baron Corporation, Phoenix, Ariz.
Filed May 27, 1983, Ser. No. 498,708
Term of patent 14 years
U.S. Cl. D15—1

279,294
MOTORCYCLE ENGINE CYLINDER
William G. Davidson, Elm Grove, Wis., assignor to Harley-Davidson Motor Co., Inc., Milwaukee, Wis.
Filed Oct. 3, 1983, Ser. No. 538,206
Term of patent 14 years
U.S. Cl. D15—5



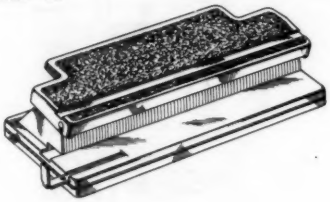
279,295
HAND OPERABLE FABRIC REPAIRING MACHINE
Michael E. Laude, Danbury; Thomas J. Pendleton, N. Wilton, both of Conn.; Douglas W. Smith, Belle Mead, N.J.; Robert E. Dawson, Ridgefield, Conn., and Andrew J. Blance, Rye, N.Y., assignors to The Singer Company, Stamford, Conn.
Filed Jan. 14, 1983, Ser. No. 457,842
Term of patent 14 years
U.S. Cl. D15—66

279,296
TYPEWRITER
Toshiaki Funato; Masayuki Morishita, and Masafumi Itoh, all of Nagoya, Japan, assignors to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan
Filed Jul. 6, 1983, Ser. No. 511,341
Claims priority, application Japan, Jan. 11, 1983, 58-503
Term of patent 14 years
U.S. Cl. D18—1

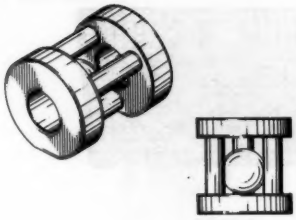
279,297
ERASER
William Rosson, 300 Mercer St., New York, N.Y. 10003
Filed Feb. 1, 1983, Ser. No. 462,883
Term of patent 14 years
U.S. Cl. D19—53

279,298
POWER FACTOR DEMONSTRATOR
Kenneth J. Petrus, Greenwood, S.C., assignor to McGraw-Edison Company, Rolling Meadows, Ill.
Filed Nov. 8, 1982, Ser. No. 441,828
Term of patent 14 years
U.S. Cl. D19—62

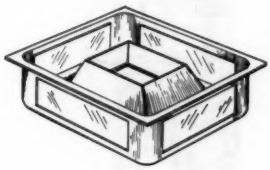
279,299
SHEET PUNCH
Joseph K. Semerjian, Franklin Park, and Glenn R. Lodge, Mt. Prospect, both of Ill., assignors to Wilson Jones Company, New York, N.Y.
Filed Mar. 12, 1982, Ser. No. 357,737
Term of patent 14 years
U.S. Cl. D19—72



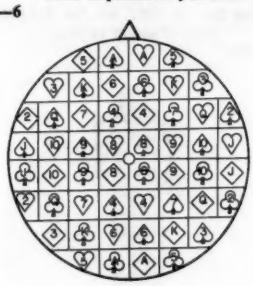
279,300
PAPERWEIGHT
Rodney A. Wolf, Rte. 1, Box 63A, Amhurst Junction, Wis. 54407
Filed Jun. 6, 1983, Ser. No. 501,121
Term of patent 14 years
U.S. Cl. D19—97



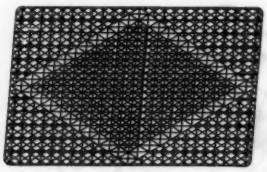
279,301
SUSPENDED CEILING SIGN
Ronald W. Cobb, Atlanta, Ga., assignor to Apco Graphics, Inc., Atlanta, Ga.
Filed Nov. 3, 1983, Ser. No. 548,301
Term of patent 14 years
U.S. Cl. D20—42



279,302
DART BOARD
Frank L. Wood, 1701-740 Hamilton St., New Westminster, British Columbia, Canada
Filed Dec. 6, 1982, Ser. No. 447,419
Term of patent 14 years
U.S. Cl. D21—6

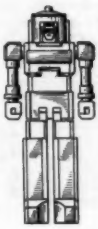


279,303
PASTEBOARD FOR PLAYING CARDS
Wataru Kaga, 1-1-9, Hatta-Aobadai, Higashi-ku, Fukouka-shi, Fukuoka-ken, Japan
Filed Nov. 15, 1982, Ser. No. 441,344
Term of patent 14 years
U.S. Cl. D21—47



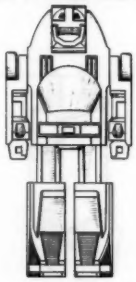
279,304
TOY KITCHEN CART
Alexander Imatt, Oak Brook, and Wayne A. Kuna, Oak Park, both of Ill., assignors to Marvin Glass & Associates, Chicago, Ill.
Filed Dec. 19, 1983, Ser. No. 563,094
Term of patent 14 years
U.S. Cl. D21—122

279,305
TOY ROBOT CONVERTIBLE INTO STEAM LOCOMOTIVE
Katsushi Murakami, Tokyo, Japan, assignor to Kabushiki Kaisha Bandai, Japan
Filed Sep. 16, 1982, Ser. No. 418,826
Term of patent 14 years
U.S. Cl. D21—150



279,306
TOY ROBOT CONVERTIBLE INTO A COMBAT CAR
Katsushi Murakami, Tokyo, Japan, assignor to Kabushiki Kaisha Popy, Japan
Filed Sep. 16, 1982, Ser. No. 418,829
Term of patent 14 years
U.S. Cl. D21—150

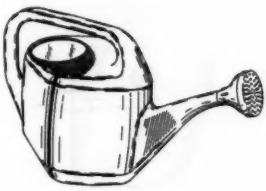
279,307
TOY ROBOT CONVERTIBLE INTO AN AUTOMOBILE
Katsushi Murakami, Tokyo, Japan, assignor to Kabushiki Kaisha Popy, Japan
Filed Sep. 16, 1982, Ser. No. 418,830
Term of patent 14 years
U.S. Cl. D21—150



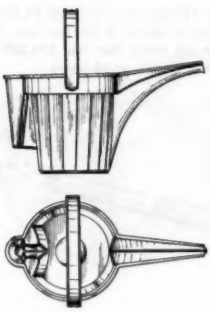
279,308
WATER TOY FIGURE
Claire M. Marschak, East Aurora, N.Y., assignor to The Quaker Oats Company, Chicago, Ill.
Filed Jan. 20, 1983, Ser. No. 459,486
Term of patent 14 years
U.S. Cl. D21—160

279,309
GOLF CLUB CRADLE
Michael S. Rosen, Richboro, and Gerald Katzoff, Bensalem, both of Pa., assignors to Rokat Enterprises, Inc., Feasterville, Pa.
Filed Feb. 22, 1983, Ser. No. 468,259
Term of patent 14 years
U.S. Cl. D21—234

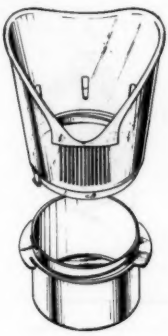
279,310
WATERING CAN
Kent W. Murphy, Wooster, Ohio, assignor to Rubbermaid Incorporated, Wooster, Ohio
Filed Mar. 7, 1983, Ser. No. 473,008
Term of patent 14 years
U.S. Cl. D23—11

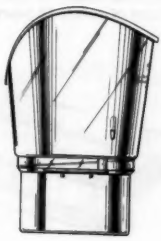


279,311
WATERING CAN
James H. Schwartzburg, Lawrence, Kans., assignor to Packer Plastics, Inc., Lawrence, Kans.
Filed Jul. 29, 1983, Ser. No. 518,697
Term of patent 14 years
U.S. Cl. D23—11

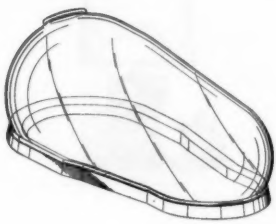


279,312
COMBINED INHALATOR AND FACIAL TREATMENT VAPOR APPLICATOR MASK FOR RESERVOIR
Horst D. Pohlmann, Maintal, Fed. Rep. of Germany, assignor to Degussa Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany
Filed Nov. 10, 1982, Ser. No. 440,591
Term of patent 14 years
U.S. Cl. D23—148

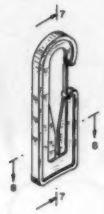




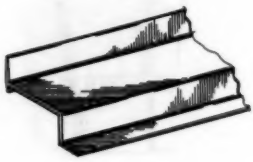
279,313
SUN BED
Derek C. Tolley, Eisteddfa Farm, Llanon, Llanelli, Dyfed, Wales
Filed Feb. 1, 1982, Ser. No. 344,306
Term of patent 14 years
U.S. Cl. D24—39



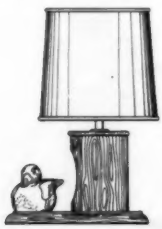
279,314
TUBING SLIDE CLAMP
Masami Ishida, Osaka, and Keinosuke Isono, Kawaguchi, both of Japan, assignors to Terumo Corporation, Tokyo, Japan
Filed Apr. 26, 1982, Ser. No. 371,993
Claims priority, application Japan, Feb. 16, 1981, 56-5759
Term of patent 14 years
U.S. Cl. D24—53



279,315
BASEBOARD DRAINAGE COLLECTING CHANNEL
Michael F. Smith, P.O. Box 1016, Cumming, Ga. 30130
Filed Sep. 28, 1982, Ser. No. 432,992
Term of patent 14 years
U.S. Cl. D25—74

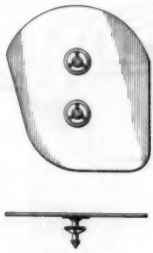


279,316
DECORATIVE LAMP
William Stafford, 101 Wheeler Dr., Hanhan, S.C. 29406
Filed Aug. 6, 1982, Ser. No. 406,069
Term of patent 14 years
U.S. Cl. D26—98



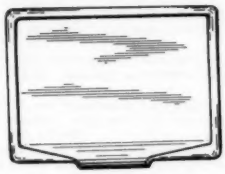
279,317
AQUARIUM ORNAMENT
Jerome Goldman, New York; Marvin Goldman, Great Neck; Gerald Philips, Glen Cove, and Joseph Pesin, Brooklyn, all of N.Y., assignors to Penn Plax Plastics, Garden City, N.Y.
Filed Jun. 2, 1983, Ser. No. 500,454
Term of patent 14 years
U.S. Cl. D30—12

279,318
EAR TAG FOR ANIMALS
Edward E. Dvorak, P.O. Box 79, Manning, N. Dak. 58642
Filed Mar. 19, 1984, Ser. No. 590,855
Term of patent 14 years
U.S. Cl. D30—43

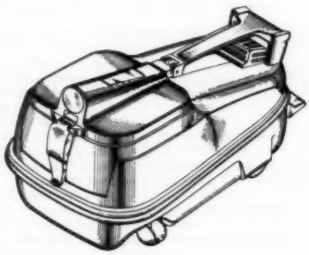


279,319
HAND HELD BLOWER
Donald R. McCloskey, Trappe, and Thornton H. Gogoll, Easton, both of Md., assignors to Black & Decker Inc., Newark, Del.
Filed Apr. 20, 1982, Ser. No. 370,249
Term of patent 14 years
U.S. Cl. D32—15

279,320
DRAINBOARD
Robert L. Ivanusic, 6044 Sayer St., Pittsburgh, Pa. 15201
Filed Aug. 25, 1982, Ser. No. 411,578
Term of patent 14 years
U.S. Cl. D32—56

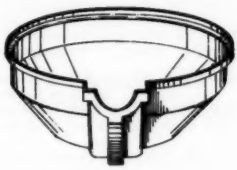


279,321
VACUUM CLEANER
Harold J. Schoettler, 3321 Bounty Cir., Huntington Beach, Calif. 92649
Filed Nov. 7, 1983, Ser. No. 549,677
Term of patent 14 years
U.S. Cl. D32—24

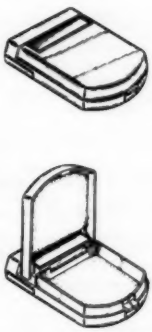


279,322
APPLIQUE FOR WEARING APPAREL
Steven DiMaria, 136 Mohawk Dr., Carol Stream, Ill. 60188
Filed Feb. 14, 1983, Ser. No. 465,834
Term of patent 14 years
U.S. Cl. D33—9 C

279,323
GRAIN HOPPER
James Spenceley, P.O. Box 159, Lethbridge, Alberta, Canada (T1J 3Y5)
Filed Apr. 23, 1982, Ser. No. 371,172
Term of patent 14 years
U.S. Cl. D34—28



279,324
COIN TRAY FOR VEHICLES
Yoshihisa Tanaka, Ichikawa, Japan, assignor to Tanaka Manufacturing Co., Ltd., Tokyo, Japan
Filed Jan. 17, 1983, Ser. No. 458,852
Term of patent 14 years
U.S. Cl. D99—34



LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 18TH DAY OF JUNE, 1985

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

A. E. Staley Manufacturing Company: *See*—
Valenty, Vivian B., 4,524,009, Cl. 252-89.100.

AB Volvo: *See*—
Backlund, Ove, 4,523,553, Cl. 123-192.00B.

Abbott, Bernard J.; Debono, Manuel; and Fukuda, David S., to Eli Lilly and Company. A-21978C cyclic peptides. 4,524,135, Cl. 435-69.000.

Abbott Laboratories: *See*—
Larkin, Mark E.; and Knox, Kenneth H., 4,523,691, Cl. 220-266.000.

Abdel-Hehim, Hossam A. A.; Coelho, Wagner C.; and Soares, Gloria M. G., to Petroleo Brasileiro S.A. - Petrobras. Process for the partial solubilization of phosphate rock and obtaining phosphate fertilizers therefrom. 4,523,941, Cl. 71-37.000.

Abe, Yoshinori; and Matsunawa, Masahiko, to Konishiroku Photo Industry Co., Ltd. Shading correction device. 4,524,388, Cl. 358-163.000.

Abellana, Jovito N.; and Nambudiri, Easwaran C. N., to Pitney Bowes Inc. Mailing machine with envelope insertion sensing apparatus. 4,523,523, Cl. 101-235.000.

Abou, Shouji; and Sasaki, Itsuo, to Tokyo Shibaura Denki Kabushiki Kaisha. MOS Power amplifier circuit. 4,524,328, Cl. 330-253.000.

Abou, Shouji, to Kabushiki Kaisha Toshiba. Operational amplifier circuit. 4,524,329, Cl. 330-253.000.

Abrahamson, Carl W.: *See*—
Nepper, Robert F.; Solyntjes, Alan J.; and Abrahamson, Carl W., 4,523,836, Cl. 355-16.000.

Abramo, Carlos A. D. System for the refrigeration of liquids and/or gases. 4,523,637, Cl. 165-104.340.

Acampora, Alfonse, to RCA Corporation. Digital signal separation filters. 4,524,423, Cl. 364-724.000.

Achee, John D.: *See*—
Cuozzo, Anthony; and Achee, John D., 4,523,362, Cl. 29-148.40A.

Acutherm, Ltd.: *See*—
Kline, James R.; and Brand, Peter, 4,523,713, Cl. 236-1.00C.

Adachi, Masami: *See*—
Suzuki, Hideo; Ohtsuka, Kanji; and Adachi, Masami, 4,524,213, Cl. 549-235.000.

Adachi, Toshikazu: *See*—
Harada, Nozomu; Ito, Hiroshi; and Adachi, Toshikazu, 4,523,544, Cl. 118-702.000.

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Adam, Randall E.; and Schultz, William J., to Minnesota Mining and Manufacturing Company. Curable epoxy compositions and cured resins obtained therefrom. 4,524,181, Cl. 525-107.000.

Advanced Technology Business Creation, Inc.: *See*—
Futagawa, Toshinobu, 4,523,725, Cl. 242-58.000.

Aer-Overly Corporation: *See*—
McCarthy, Richard A., 4,523,390, Cl. 34-115.000.

Aerochem, Inc.: *See*—
Nelson, Carl, 4,523,973, Cl. 156-626.000.

Aftab, Ahmad: *See*—
Blaauw, Cornelis; Naguib, Hussein M.; Ahmed, Syed M.; and Aftab, Ahmad, 4,524,091, Cl. 427-74.000.

Agence Nationale de Volorisation de la Recherche (ANVAR): *See*—
Delhaye, Michel M.; Dhamelincourt, Paul A.; da Silva, Edouard F.; and Barbillat, Jacques H., 4,523,799, Cl. 350-6.300.

Agfa-Gevaert Aktiengesellschaft: *See*—
Bergthaller, Peter; Stolzenburg, Rudolf; Marx, Paul; and Hamprecht, Rainer, 4,524,124, Cl. 430-241.000.
Himmelmann, Wolfgang; Sackmann, Gunter; and Meyer, Rudolf, 4,524,131, Cl. 430-523.000.
Payrhammer, Bernd; and Knor, Bernhard, 4,523,839, Cl. 355-68.000.
Schenk, Gunther; Bergthaller, Peter; Heidenreich, Holger; and Wolfrum, Gerhard, 4,524,123, Cl. 430-241.000.

AGFA-Gevaert N.V.: *See*—
De Cock, Etienne M.; De Schamphelaere, Lucien A.; Librecht, Freddy M.; and Van Peteghem, Willy F., 4,524,372, Cl. 346-160.000.

Ahmed, Syed M.: *See*—
Blaauw, Cornelis; Naguib, Hussein M.; Ahmed, Syed M.; and Aftab, Ahmad, 4,524,091, Cl. 427-74.000.

Ahrendt, Donald A., to Allis-Chalmers Corp. Single lever control device for multiple functions. 4,523,488, Cl. 74-471.0XY.

Aileo, Jackson A.: *See*—
Scalzo, John P.; and Aileo, Jackson A., 4,523,661, Cl. 181-129.000.

Air Products and Chemicals, Inc.: *See*—
Chen, Michael S.; Edwards, Thomas J.; and Ernst, William R., 4,524,050, Cl. 423-243.000.

Air Sensors, Inc.: *See*—
Watkins, Dennis W., 4,523,461, Cl. 73-204.000.

Aisin Seiki Kabushiki Kaisha: *See*—
Arai, Fuminao; Kodama, Hisashi; and Ono, Takuro, 4,523,551, Cl. 123-90.460.
Omitsu, Takashi, 4,523,565, Cl. 123-399.000.

AJ-Produkter I Hyltebruk AB: *See*—
Aspen, Kjell, 4,523,784, Cl. 296-100.000.

Ajiki, Harumi: *See*—
Mizutani, Shinichi; and Ajiki, Harumi, 4,523,363, Cl. 29-235.000.

Ajinomoto Co., Inc.: *See*—
Toyoshi, Seiji; Tanegawa, Tetsuo; Saeki, Masaru; and Kawakita, Tetsuya, 4,523,999, Cl. 210-639.000.

Akers, James B., Jr.; Leng, Douglas E.; and Normand, Randall J., to Dow Chemical Company, The. Preparation of chlorinated polyolefins. 4,524,189, Cl. 525-35.00G.

Akimoto, Mamoru: *See*—
Kondo, Kazuo; Imamura, Seiji; Saito, Shigemasa; Akimoto, Mamoru; and Sunaga, Mitsuo, 4,523,711, Cl. 228-198.000.

Akimoto, Yoshiteru: *See*—
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Akita, Shigeyuki: *See*—
Kodera, Masao; Akita, Shigeyuki; and Yoshino, Yasuhisa, 4,524,356, Cl. 340-904.000.

Akzo NV: *See*—
Schild, Franz; and Weidenhaupt, Wolfgang, 4,523,425, Cl. 57-212.000.

Alan Shelton Limited: *See*—
Braybrook, George E.; Corby, David C.; Shelton, Mark A.; and Shelton, William E. A., 4,523,441, Cl. 68-5.00C.

Albe S.A.: *See*—
Giovanola, Massimo, 4,523,360, Cl. 29-38.00C.

Albers, Rolf; Aschenbruck, Emil; Neuhaus, Gunter; and Kotzur, Joachim, to M.A.N. Maschinenfabrik Augsburg-Nurnberg Aktiengesellschaft. Fluid-sealed shaft seal with bores for supplying and discharging fluid. 4,523,764, Cl. 277-3.000.

Aldag, Arthur W. Alkali metal-promoted zinc titanate hydrogel catalyst for dehydrogenation of organic compounds. 4,524,144, Cl. 502-342.000.

Aldridge, R. Warren, Jr., to Spencer Wright Industries, Inc. Disc brake lathe. 4,523,499, Cl. 82-4.00A.

Alessio, Lorenzo E., to Black & Decker Inc. Portable machine tool having an operating unit mounted on a column. 4,523,504, Cl. 83-471.300.

Alexander, Delores J.; Kurple, Kenneth R.; and Kordomenos, Panagiotis I. Flexible coating compositions. 4,524,192, Cl. 525-440.000.

Allen, Edwin M.; Foust, Eugene C.; Sievert, Steven A.; Fitzgerald, William C.; and Moffitt, Max L., to United States of America, Navy. Asperic surface test fixture. 4,523,842, Cl. 356-124.000.

Allen, Robert J.: *See*—
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Allensworth, Dwight L.; and Chen, Peter J., to United States of America, Energy. Apparatus and method for generating mechanical waves. 4,524,295, Cl. 310-328.000.

Allergan Pharmaceuticals, Inc.: *See*—
Wheeler, Larry A., 4,524,063, Cl. 424-78.000.

Allied Corporation: *See*—
Long, David J.; and Oxenrider, Bryce C., 4,524,215, Cl. 560-052.000.
Luly, Matthew H.; Lockyer, George D., Jr.; Eibeck, Richard E.; and Gaynor, Joseph, 4,524,119, Cl. 430-108.000.
Mas, Joseph, 4,524,342, Cl. 336-182.000.
Ray, Ranjan, 4,523,621, Cl. 164-46.000.
Samuels, George J.; Schmitkons, Thomas A.; Streeter, Terry L.; and Murray, Royce W., 4,524,114, Cl. 429-42.000.
Walker, Bertice E., Jr.; and Hyder, Richard J., 4,523,373, Cl. 29-593.000.
Wan, Chung-Chu; Wang, Rong Y.; and Kapoor, Deepak, 4,523,950, Cl. 75-123.00B.

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Ahrendt, Donald A., 4,523,488, Cl. 74-471.0XY.

Alps Electric Co., Ltd.: *See*—
Miyata, Hiroyasu; and Ito, Kazuhiko, 4,524,256, Cl. 200-86.00R.

Alston, Arthur: *See*—
Chin, Thomas G.; Klaver, Rudy F.; and Alston, Arthur, 4,523,860, Cl. 374-27.000.

Altschuler, Bruce R.: *See*—
Taboada, John; and Altschuler, Bruce R., 4,523,809, Cl. 350-163.000.

Aluminium Pechiney: *See*—
Vives, Charles, 4,523,628, Cl. 164-468.000.

Amax Inc.: *See—*
McHugh, Larry F.; and Barchers, Daniel E., 4,523,948, Cl. 75-7.000.
AMCA International Corp.: *See—*
Larson, Michael E., 4,524,326, Cl. 328-14.000.
American Cyanamid Company: *See—*
Streetman, William E.; and Daftary, Shashikumar H., 4,524,105, Cl. 428-364.000.
American Ka-ro Corporation: *See—*
Schurmann, Heiner J., 4,523,677, Cl. 206-158.000.
American Transceiver Corp.: *See—*
Kostanty, Raymond G.; Sciabbarrasi, Michael; and Grossman, Walter B., 4,524,461, Cl. 455-79.000.
Ameyama, Minoru: *See—*
Kakeno, Sadao; Ameyama, Minoru; Ichikawa, Kenichi; Umezawa, Michio; and Yamaguchi, Tomoyuki, 4,524,365, Cl. 346-75.000.
Amundson, Everett: *See—*
Haugen, Gary; and Amundson, Everett, 4,523,674, Cl. 198-843.000.
aNB Jackets de Puerto Rico: *See—*
Dorman, Isidore, 4,523,401, Cl. 40-159.000.
Anderson, Vernon B.: *See—*
Ong, Helen H.; Anderson, Vernon B.; and Profitt, James A., 4,524,207, Cl. 546-17.000.
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Oka, Joji; Iwakura, Hideaki; Ando, Narumi; Iwasaki, Kiyotoshi; and Shindow, Yoshio, 4,524,111, Cl. 428-551.000.
Andreini, Rockne J.; Farmer, Audley J.; and Yaguchi, Svetlana, to Earle M. Jorgensen Co. Stainless steel. 4,523,951, Cl. 75-126.00B.
Ang, Peter G. P.; and Sammells, Anthony F., to Texaco Inc. Means and method for reducing carbon dioxide to provide a product. 4,523,981, Cl. 204-72.000.
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Minchev, Pavel M.; Hristov, Hristomir D.; Balinov, Stoimen S.; Angelov, Mihail H.; and Yordanov, Nikolay V., 4,523,708, Cl. 228-37.000.
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Gockel, Karl-Heinz; Anhauser, Dieter; Hoffmann, Hans R.; and Reinhold, Karl-Heinz, 4,524,095, Cl. 428-43.000.
Anic S.p.A.: *See—*
Cesca, Sebastiano; Priola, Aldo; and Renzi, Fiorenzo, 4,524,092, Cl. 427-388.200.
Greco, Alberto; Bertolini, Guglielmo; and Zavattini, Omero, 4,524,187, Cl. 525-332.100.
Antel, Otto: *See—*
Burkhardt, Fritz; and Antel, Otto, 4,523,367, Cl. 29-568.000.
Aoki, Kozo; Umemoto, Makoto; and Ogawa, Akira, to Fuji Photo Film Co., Ltd. Color photographic silver halide light-sensitive material. 4,524,132, Cl. 430-552.000.
Aoki, Masayuki, to Tokyo Shibaura Denki Kabushiki Kaisha. Back-up control circuit for controlling a magnetron of a microwave oven. 4,524,258, Cl. 219-10.55B.
Apache Equipment, Inc.: *See—*
Hedrick, Harold M., II, 4,523,988, Cl. 209-11.000.
Applied Power Inc.: *See—*
Giacomini, Gian F., 4,523,384, Cl. 33-180.0AT.
APV Company Limited: *See—*
Smith, David A., 4,523,515, Cl. 92-59.000.
Arai, Fuminao; Kodama, Hisashi; and Ono, Takuro, to Aisin Seiki Kabushiki Kaisha. Valve actuating device. 4,523,551, Cl. 123-90.460.
Arai, Kenichi: *See—*
Tsuya, Noboru; Arai, Kenichi; and Takeuchi, Toshio, 4,523,966, Cl. 148-171.000.
Arai, Naoki: *See—*
Ikenoue, Tsuneo; Liu, Shin-yng; Arai, Naoki; and Umemoto, Shuichi, 4,524,413, Cl. 363-127.000.
Araki, Shuichi; and Hashiyama, Hideshi, to Dainippon Screen Seizo Kabushiki Kaisha. Method for compressing data of two-value picture image. 4,524,456, Cl. 382-56.000.
Arao, Kozo; and Sato, Tadashi, to Canon Kabushiki Kaisha. Optical scanning device. 4,523,803, Cl. 350-96.130.
Araya, Shinji; and Tsuji, Shintaro, to Mitsubishi Denki Kabushiki Kaisha. Demand estimation apparatus. 4,524,418, Cl. 364-436.000.
Arena, Aldo; and Benoit, Robert L., to Grumman Aerospace Corporation. Torsion resistant grooved joint. 4,523,872, Cl. 403-274.000.
Arena, Blaise J.: *See—*
Qualeatti, Gail M.; Rosen, Bruce I.; Arena, Blaise J.; and Germanas, Dalia, 4,524,225, Cl. 568-885.000.
Arens, Hans, to Grunbeck Wasseraufbereitung GmbH. Dosing pump. 4,523,903, Cl. 417-489.000.
Arichi, Shigeru; and Uchida, Yoshihiro, to Osaka Chemical Laboratory Co., Ltd. Soybean saponins, and a method of isolating the same. 4,524,067, Cl. 514-33.000.
Armatron International, Inc.: *See—*
DeYoreo, Sal G., 4,523,404, Cl. 43-112.000.
Armbruster, Curtis J. Collapsible automotive clothing hanger. 4,523,701, Cl. 223-94.000.
Armour Pharmaceutical Company: *See—*
Laba, Dennis; Margres, John J., Jr.; and Burkhardt, Kristin, 4,524,062, Cl. 424-65.000.
Armstrong, Jack: *See—*
Vessey, John R.; Patel, Chandrakant M.; and Armstrong, Jack, 4,523,673, Cl. 198-486.000.
Armstrong, John T., Jr.: *See—*
Mitchell, Randall M.; and Armstrong, John T., Jr., 4,523,892, Cl. 417-34.000.
Arndt, Kim E.; McCormick, Ronald W.; and Rogers, Richard B., to Dow Chemical Company, The. Soil treating method and composition for conserving nitrogen in soil. 4,523,940, Cl. 71-11.000.
Arnoldo Mondadori Editore S.p.A.: *See—*
Cantini, Maurizio, 4,523,977, Cl. 162-259.000.
Arnsteiner, Anton, to Blizzard Gesellschaft m.b.H. Sandwich type construction multilayer skis. 4,523,772, Cl. 280-610.000.
Asahi Kasei Kogyo Kabushiki Kaisha: *See—*
Nakamura, Katuyuki; and Neki, Kazuya, 4,524,191, Cl. 525-425.000.
Asahi Kogaku Kogyo Kabushiki Kaisha: *See—*
Okudaira, Sadao, 4,523,814, Cl. 350-427.000.
Tomori, Yasumasa, 4,523,815, Cl. 350-430.000.
Asano, Masumi; Ugajin, Mitsuyuki; and Isogai, Kiyoshi, to Toyota Jidosha Kabushiki Kaisha. Turbocharger lubricating oil sealing method. 4,523,763, Cl. 277-1.000.
Aschenbruck, Emil: *See—*
Albers, Rolf; Aschenbruck, Emil; Neuhaus, Gunter; and Kotzur, Joachim, 4,523,764, Cl. 277-3.000.
Asics Corporation: *See—*
Inohara, Masanobu, 4,523,393, Cl. 36-29.000.
Aspen, Kjell, to AJ-Produkter I Hyltebruk AB. Latch construction for locking a cover to a platform of a lorry. 4,523,784, Cl. 296-100.000.
Ast, Dieter G., to Cornell Research Foundation, Inc. Method of making strips of metallic glasses having uniformly distributed embedded particulate matter. 4,523,625, Cl. 164-461.000.
AT&T Bell Laboratories: *See—*
Eng, Wing K., 4,524,412, Cl. 363-56.000.
Hartman, Robert L.; Koszi, Louis A.; Williams, Richard S.; and Zilko, John L., 4,523,961, Cl. 148-1.500.
Lindenberger, W. Stewart; Poteat, Tommy L.; and West, James E., 4,524,247, Cl. 179-111.00R.
Orsic, Milo, 4,524,440, Cl. 370-54.000.
AT&T Technologies, Inc.: *See—*
Chapman, Ivan B., Jr., 4,523,498, Cl. 81-177.100.
Cushman, Robert H.; and Stout, Charles E., Jr., 4,523,972, Cl. 156-617.0SP.
Jablway, Ali N.; and Mitchell, Alexander M., 4,524,321, Cl. 324-66.000.
Zado, Frank M., 4,523,712, Cl. 228-207.000.
Ateliers de Constructions Electriques de Charleroi: *See—*
Defosse, Georges; and Hensenne, Joseph, 4,523,573, Cl. 124-41.00R.
Atlantic Richfield Company: *See—*
Hastings, Joe R., 4,523,459, Cl. 73-155.000.
Schuh, Frank J., 4,523,652, Cl. 175-61.000.
Auberry, Horace; Liebscher, Anton; and Oberg, Sven, to Ro-Search, Incorporated (Ro-Search). Method and device for the manufacture of footwear. 4,523,346, Cl. 12-133.00R.
Aucouturier, Jean L.: *See—*
Vidalin, Jacques; and Aucouturier, Jean L., 4,524,427, Cl. 364-900.000.
Ausnit, Steven, to Minigrip, Inc. Method of forming a bag chain. 4,523,918, Cl. 493-198.000.
Austin, Peter W.: *See—*
Foster, Stephen R.; and Austin, Peter W., 4,523,516, Cl. 92-130.00B.
Awaya, Akira: *See—*
Sakano, Isao; Yokoyama, Tatsuro; Kajiya, Seitaro; Okazaki, Yutaka; Tokuda, Hiroshi; Kawazura, Hiroshi; Kumakura, Mikio; and Awaya, Akira, 4,524,147, Cl. 514-274.000.
Axelson, Inc.: *See—*
Snyder, David E., 4,523,602, Cl. 137-467.000.
Azypatent AG: *See—*
Gippa, Michelangelo, 4,523,359, Cl. 29-38.00A.
B.A.T. Cigarettenfabriken GmbH: *See—*
Weiss, Arno; and Ulrich, Jorn, 4,523,598, Cl. 131-291.000.
B. F. Goodrich Company, The: *See—*
Devry, William E., 4,524,093, Cl. 427-389.900.
Baba, Takeshi; Nose, Noriyuki; Yoshikawa, Hideo; Minoura, Kazuo; Hasu, Akinori; Minami, Setsuo; and Matsuoka, Kazuhiko, to Canon Kabushiki Kaisha. Scanning optical system subjected to a moisture proof treatment. 4,523,801, Cl. 350-6.800.
Backlund, Ove, to AB Volvo. Combustion engine with balancing device. 4,523,553, Cl. 123-192.00B.
Backx, Leo J. J.: *See—*
Heeres, Jan; Backx, Leo J. J.; and Mostmans, Joseph H., 4,524,110, Cl. 428-537.100.
Badger Company, Inc., The: *See—*
Hughes, Richard E., 4,524,024, Cl. 260-97.600.
Bagby, John T.: *See—*
Beastall, William H.; Ballew, Vernon R.; Collier, Richard D.; and Bagby, John T., 4,523,417, Cl. 52-273.000.
Bain, Lee L.; and Fischbeck, Kenneth H., to Xerox Corporation. Circuitry for correcting dot placement for oscillating carriage ink jet printer. 4,524,364, Cl. 346-1.100.
Baird, Malcolm H. I.; and Nirdosh, Inderjit, to University of Waterloo. Determination of surface and interfacial tension. 4,523,456, Cl. 73-64.400.
Baisden, Jerry. Crane tool for attachment to a backhoe arm. 4,523,684, Cl. 212-175.000.
Baker CAC, Inc.: *See—*
Foster, Stephen R.; and Austin, Peter W., 4,523,516, Cl. 92-130.00B.
Baker Oil Tools, Inc.: *See—*
Stout, Gregg W., 4,523,649, Cl. 175-4.510.

Bakshi, Kiran R.; Barie, Walter P.; and Sabourin, Edward T., to Gulf Oil Corporation. Preparation of an aromatic polyimide acid by solution polymerization using propylene glycol methyl ether. 4,524,171, Cl. 524-376.000.

Balda, Raymond J.; Bukhman, Yefim; and Goodner, Willis R., to Motorola, Inc. Process for fabricating semiconductor device. 4,523,372, Cl. 29-590.000.

Balinov, Stoimen S.: *See—*
Minchev, Pavel M.; Hristov, Hristomir D.; Balinov, Stoimen S.; Angelov, Mihail H.; and Yordanov, Nikolay V., 4,523,708, Cl. 228-37.000.

Ballard, Denis G. H.; Courtis, Andrew; and Shirley, Ian M., to Imperial Chemical Industries Limited. Poly(1,2-disubstituted cyclohexa-3,5-dienes. 4,524,198, Cl. 526-292.100.

Ballew, Vernon R.: *See—*
Beastall, William H.; Ballew, Vernon R.; Collier, Richard D.; and Bagby, John T., 4,523,417, Cl. 52-273.000.

Bandai, Mikio: *See—*
Eguchi, Mitsuo; Tagawa, Kiyoharu; Ogawa, Hitoshi; Bandai, Mikio; and Nagashima, Nobuharu, 4,523,829, Cl. 354-406.000.

Banks, Robert L.; and Kukes, Simon G. Olefin disproportionation and catalyst therefor. 4,524,235, Cl. 585-646.000.

Banquy, David, to Foster Wheeler Energy Corporation. Process for the production of ammonia. 4,524,056, Cl. 423-359.000.

Bansal, Arun K., to Quaker Oats Company, The. Method for making a marbled pet food. 4,524,081, Cl. 426-249.000.

Banton, Martin E., to Xerox Corporation. Multi-mode reproduction apparatus. 4,524,395, Cl. 358-300.000.

Bar, Alfredo, to Necchi S.p.A. Silencer of the resonance absorption type in motorcompressor for refrigerators. 4,523,663, Cl. 181-403.000.

Barakitis, Nikolaos: *See—*
Cohen, Sheppard; Barakitis, Nikolaos; Loughridge, Frederick A.; and Marlor, Richard C., 4,524,301, Cl. 313-493.000.

Baranyi, Giuseppa; Kazmaier, Peter M.; Hsiao, Cheng-Kuo; and Burt, Richard A., to Xerox Corporation. Processes for the preparation of squaraine compositions. 4,524,218, Cl. 564-307.000.

Barber, Alan G., to Union Carbide Corporation. Method for dispersing fibrillated fibers. 4,524,158, Cl. 523-130.000.

Barber, Alan G., to Union Carbide Corporation. Leak stopping composition and method. 4,524,159, Cl. 523-177.000.

Barber, Donald T., to Datafile Limited. Method of adding color coded labels to files. 4,523,776, Cl. 283-39.000.

Barber, James J., to Halcon SD Group, Inc., The. Process for the recovery of high purity squaric acid. 4,523,980, Cl. 204-59.00R.

Barber, S. Morgan. Device for suspending the human body in an inverted position. 4,523,582, Cl. 128-71.000.

Barbillat, Jacques H.: *See—*
Delhaye, Michel M.; Dhamelincourt, Paul A.; da Silva, Edouard F.; and Barbillat, Jacques H., 4,523,799, Cl. 350-6.300.

Barchers, Daniel E.: *See—*
McHugh, Larry F.; and Barchers, Daniel E., 4,523,948, Cl. 75-7.000.

Bardsley, Robert F.; Finucane, Thomas P.; Hebel, Carl; Schoonmaker, Charles D.; Wruk, Philip J.; and Lee, Edward P., deceased (by Lee, Janice N., executrix), to General Foods Corporation. Pressurized container providing for the separate storage of a plurality of materials. 4,524,078, Cl. 426-112.000.

Barie, Walter P.: *See—*
Bakshi, Kiran R.; Barie, Walter P.; and Sabourin, Edward T., 4,524,171, Cl. 524-376.000.

Barkhoudarian, Sarkis, to Rockwell International Corporation. Lightweight torquemeter and torque-measuring method. 4,523,482, Cl. 73-862.360.

Barmag Barmer Maschinenfabrick AG: *See—*
Schippers, Heinz; Hertell, Siegfried; and Eich, Otwin, 4,523,901, Cl. 417-395.000.

Barmatz, Martin B.; Stoneburner, James D.; Jacobi, Nathan; and Wang, Taylor G., to United States of America, National Aeronautics and Space Administration. Acoustic particle separation. 4,523,682, Cl. 209-638.000.

Barnabeo, Austin E.; and Keogh, Michael J., to Union Carbide Corporation. Reactive organo titanate catalysts. 4,524,201, Cl. 528-395.000.

Barrash, Marshall J., to Coca-Cola Company, The. Multi-container package with optional cover and method for making the same. 4,523,676, Cl. 206-150.000.

Barrows, Kenneth C.; and Divers, Raymond T., to Carrier Corporation. Connector block. 4,523,798, Cl. 339-192.0RL.

Barry, Edward R. Lightweight body respirator having flexible walls. 4,523,579, Cl. 128-30.200.

BASF Aktiengesellschaft: *See—*
Fechner, Wolf D.; Polster, Rudolf; Kranz, Joachim; and Hartmann, Eduard, 4,523,958, Cl. 106-288.00Q.
Hamprecht, Gerhard; Varwig, Juergen; and Wuerzer, Bruno, 4,523,942, Cl. 71-88.000.
Parg, Adolf; Wuerzer, Bruno; and Hamprecht, Gerhard, 4,523,946, Cl. 71-092.000.

Basic Packaging Systems, Inc.: *See—*
Titchenal, Oliver R., 4,524,459, Cl. 383-37.000.

Battelle Development Corporation: *See—*
Hillman, Melville E. D.; Huffman, William J.; Lipinsky, Edward S.; and Stambaugh, Edgel, 4,523,928, Cl. 44-56.000.

Bauer, Armin; Ehrend, Helfried; Morche, Klaus; Nutzel, Karl; and Sauerbier, Michael, to Rhein-Chemie Rhein GmbH. Use of crosslinked epoxidized fatty oils in vulcanizing polymers. 4,524,182, Cl. 525-120.000.

Bauer, Robert, to Miles Laboratories, Inc. Color comparison reference standard and method for using same. 4,523,852, Cl. 356-421.000.

Baumgartner, Werner; Krockow, Dieter; and Tihany, Jeno , to Siemens Aktiengesellschaft. Photo transistor. 4,524,375, Cl. 357-30.000.

Bayer Aktiengesellschaft: *See—*
Bonse, Gerhard; Lantzsch, Reinhard; Dorr, Henning; Kreiss, Wolfgang; Dickore, Karlfried; Ditgens, Klaus; and Kranz, Eckart, 4,524,205, Cl. 544-223.000.
Brandt, Horst; Gehrke, Gunter; Muders, Rolf; Otten, Hans-Gunter; and Wiegner, Dieter, 4,523,926, Cl. 8-639.000.
Kloker, Werner; and Kraft, Klaus, 4,524,177, Cl. 525-14.000.
Steinberger, Helmut; Kirschnek, Helmut; and Pfeiffer, Josef, 4,524,172, Cl. 524-506.000.
Tietze, Lutz-Friedjan; and Fischer, Roland, 4,524,202, Cl. 536-18.500.

Bayer, Ulrich; and Ochs, Siegfried, to Daimler-Benz Aktiengesellschaft. Rotational speed measuring device with economy field. 4,523,457, Cl. 73-114.000.

Bayne, Christopher J.; Lambert, Joseph L.; and Collyer, Graham E., to Heraeus Quarzschmelze GmbH. Apparatus for loading magazines into furnaces. 4,523,885, Cl. 414-156.000.

Bazzi, Giuseppe: *See—*
Strada, Francesco; and Bazzi, Giuseppe, 4,523,648, Cl. 174-26.00R.

BBC Brown, Boveri & Company, Limited: *See—*
Frutschi, Hans-Ulrich, 4,523,432, Cl. 60-659.000.

Beastall, William H.; Ballew, Vernon R.; Collier, Richard D.; and Bagby, John T., to International Steel Company. Radiant energy shielded enclosures. 4,523,417, Cl. 52-273.000.

Beavan, Stuart W.: *See—*
Finch, Timothy D.; and Beavan, Stuart W., 4,524,014, Cl. 252-188.100.

Beck, Marlin E.; and McFarland, Robert W., to Delbar Products, Inc. Mirror swing lock mechanism. 4,523,735, Cl. 248-476.000.

Beckley, Robert A., to World Color Press, Inc. Apparatus for mixing fountain solution. 4,523,854, Cl. 366-132.000.

Becton, Dickinson and Company: *See—*
Wilner, L. Bruce; and Wong, Herbert V., 4,523,964, Cl. 148-33.200.

Bednarczuk, Robert. Portable golf driving net assembly. 4,523,760, Cl. 273-181.00F.

Beecham Group p.l.c.: *See—*
Oduro-Yeboah, Joshua, 4,524,075, Cl. 514-451.000.

Beecham Group p.l.c.: *See—*
Stirling, Irene; Bruton, Gordon; Calvert, Stephen H.; and Clarke, Brian P., 4,524,073, Cl. 514-80.000.

Beghin-Say S.A.: *See—*
Cuel, Jacques, 4,523,388, Cl. 34-35.000.

Behringer, John; and Martin, Pierre, to Robot-Coupe, S.A. Food processor assembly. 4,523,720, Cl. 241-37.500.

Behringwerke Aktiengesellschaft: *See—*
Bohn, Hans, 4,524,027, Cl. 260-112.00R.

Beitler, Bradley D.: *See—*
Richart, Jene A.; Beitler, Bradley D.; and Deeken, David G., 4,523,878, Cl. 405-195.000.

Belanger, Richard W.; and Melendy, Peter S. Mechanism for glue gun. 4,523,705, Cl. 226-127.000.

Belart, Juan; Burgdorf, Jochen; Kircher, Dieter; Bleckmann, Hans-Wilhelm; and Weise, Lutz, to ITT Industries, Inc. Method for monitoring and controlling hydraulic brake slip control devices supplied with energy from an external source, and an apparatus for implementing this method. 4,523,791, Cl. 303-92.000.

Belart, Juan; and Burgdorf, Jochen, to ITT Industries, Inc. Dual-circuit hydraulic brake system. 4,523,792, Cl. 303-92.000.

Belko, Robert P.: *See—*
Sprecker, Mark A.; Belko, Robert P.; Van Loveren, Augustinus G.; and Hanna, Marie R., 4,524,020, Cl. 252-522.00R.

Belmor Manufacturing Company: *See—*
Kooyumjian, Thomas A., 4,523,657, Cl. 180-68.100.

Bender, Harold C. Drawbar apparatus. 4,523,771, Cl. 280-474.000.

Benenati, Salvatore: *See—*
Lefkowitz, Stephen; Benenati, Salvatore; and Ickowski, Edward S., 4,524,384, Cl. 358-108.000.

Benner, Lester C.: *See—*
Brady, Thomas R.; and Benner, Lester C., 4,523,543, Cl. 118-697.000.

Benoit, Robert L.: *See—*
Arena, Aldo; and Benoit, Robert L., 4,523,872, Cl. 403-274.000.

Berczi, Charles N.; and Hall, Karen, to Milliken Research Corporation. Flame retardant finishing composition for synthetic textiles. 4,524,170, Cl. 524-371.000.

Bergman, Jan; Van Genderen, Pieter; and Hol, Willem A., to Hollandse Signaalapparaten B.V. Pulse radar apparatus. 4,524,358, Cl. 343-7.700.

Bergman, Jan; Van Genderen, Pieter; and Hol, Willem A., to Hollandse Signaalapparaten B.V. Pulse radar apparatus. 4,524,360, Cl. 343-17.10R.

Bergthaller, Peter; Stolzenburg, Rudolf; Marx, Paul; and Hamprecht, Rainer, to Agfa-Gevaert Aktiengesellschaft. Color photographic recording material containing a thiazole azo dye releaser for cyan dyes. 4,524,124, Cl. 430-241.000.

Bergthaller, Peter: *See—*
Schenk, Gunther; Bergthaller, Peter; Heidenreich, Holger; and Wolfrum, Gerhard, 4,524,123, Cl. 430-241.000.

Berkovitz, Michael A.: *See—*
Sheridon, Nicholas K.; and Berkovitz, Michael A., 4,524,371, Cl. 346-159.000.

Berlec, Ivan, to General Electric Company. General service incandescent lamp with improved efficiency. 4,524,302, Cl. 313-579.000.

Bernhardt, Siegfried: *See*—
Schmiedgen, Hans; Bernhardt, Siegfried; Strobl, Otto; and Menzel, Dietrich, 4,523,350, Cl. 19-98.000.

Berrer, Dagmar: *See*—
Szczepanski, Henry; and Berrer, Dagmar, 4,523,947, Cl. 71-93.000.

Berrey, Harry R.; and Caulier, Paul W., to Genicom Corporation. Bi-directional drive print wire actuator with forward-velocity and reverse-position closed loop feedback control. 4,523,867, Cl. 400-124.000.

Bertails, Jean C., to Societe Pour L'etude et la Fabrication des Circuits Integres Speciaux E.F.C.I.S. High-pass filter of the first order and application thereof to telephony. 4,524,425, Cl. 364-825.000.

Bertolini, Guglielmo: *See*—
Greco, Alberto; Bertolini, Guglielmo; and Zavattini, Omero, 4,524,187, Cl. 525-332.100.

Besemann, Alfred, to E.C.H. Will (GmbH & Co.). Apparatus for accumulating stacks of paper sheets or the like. 4,523,502, Cl. 83-71.000.

Bevan, Christopher G., to C. G. Bevan Associates Limited. Moulding of construction products. 4,524,039, Cl. 264-71.000.

Bhagwat, Anil G.: *See*—
Strutt, John R.; and Bhagwat, Anil G., 4,523,832, Cl. 355-3.0SH.

Biber, Klaus; Grunvogel, Karl; Lemcke, Ulrich; Jakubowski, Heinz; and Schulz, Kurt, to Carl-Zeiss-Stiftung, Heidenheim/Brenz. Adjustable stand for optical observation instruments. 4,523,732, Cl. 248-123.100.

Bickler, Donald B.: *See*—
Ross, Bernd, deceased; Bickler, Donald B.; and Gallagher, Brian D., 4,524,237, Cl. 136-261.000.

Bigot, Bernard, to Rhone-Poulenc Industries. Production of concentrated phosphoric acid and hemihydrated calcium sulfate. 4,524,057, Cl. 423-555.000.

Billingsley, James D.; and Moore, Fergus E., to LTV Aerospace and Defense Company. Predetection processing of optical information. 4,524,385, Cl. 358-113.000.

Bills, Kenneth W., Jr.; and Svob, Gerald J., to United States of America, Air Force. Simultaneous incremental strain/incremental temperature analog device for, and method, of testing for stress response. 4,523,475, Cl. 73-781.000.

Bilson, Edward B., to ITT Corporation. Luminaire door hinge. 4,523,693, Cl. 220-337.000.

Binder, Germaine; and Kremer, Bernard, to Thomson-Brandt. Insulated multiwire electric cable having protected solderable and non-heat-sealing conductors. 4,524,241, Cl. 174-119.00R.

Bindernagel, Ali: *See*—
Faste, Heinrich; and Bindernagel, Ali, 4,523,622, Cl. 164-66.100.

Bingley, John D., to RCA Corporation. Cold start surge current limiting system for a hydrazine thruster augmentation heater. 4,523,429, Cl. 60-203.100.

Bio-Specifics N.V.: *See*—
Pinnell, Sheldon R., 4,524,065, Cl. 424-94.000.

Biosound, Inc.: *See*—
Lee, Paul P., 4,523,471, Cl. 73-626.000.

Bishara, William, to Kennecott Corporation. Modular furnace lining having mechanically interlocking attachment means. 4,523,531, Cl. 110-336.000.

Bizard, Andre , to Societe En Nom Collectif. Devices for separating the cleaning bodies of tube exchangers from the fluids which transport them. 4,523,634, Cl. 165-95.000.

Biziere, Kathleen: *See*—
Kan, Jean-Paul; Biziere, Kathleen; and Wermuth, Camille-Georges, 4,524,070, Cl. 514-230.000.

Bjorklund, Gary C.; and Levenson, Marc D., to International Business Machines Corporation. Frequency modulation-polarization spectroscopy method and device for detecting spectral features. 4,523,847, Cl. 356-349.000.

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Alessio, Lorenzo E., 4,523,504, Cl. 83-471.300.

Blackburn, James. Stitch chain cutter for sewing machines. 4,523,535, Cl. 112-288.000.

Blades, Frederick K., to PureCycle Corporation. Ultrasonic transceiver circuit. 4,523,472, Cl. 73-632.000.

Blake, Andy F.: *See*—
Gould, Charles M.; and Blake, Andy F., 4,523,606, Cl. 137-119.000.

Blake, Joseph W., III; and Kaufman, Jack W. Surgical stapler. 4,523,707, Cl. 227-19.000.

Bleckmann, Hans-Wilhelm: *See*—
Belart, Juan; Burgdorf, Jochen; Kircher, Dieter; Bleckmann, Hans-Wilhelm; and Weise, Lutz, 4,523,791, Cl. 303-92.000.

Bliss, Lawrence: *See*—
Krakauer, Lawrence; and Bliss, Lawrence, 4,524,266, Cl. 235-377.000.

Blizzard Gesellschaft m.b.H.: *See*—
Arnsteiner, Anton, 4,523,772, Cl. 280-610.000.

Blumcraft of Pittsburgh: *See*—
Horgan, William J., Jr., 4,523,414, Cl. 52-204.000.

Bobb, Lloyd C., to United States of America, Navy. Fiber optic system for measuring electric fields. 4,524,322, Cl. 324-72.000.

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Rosenbladt, Rudolf V.; Nenninger, Klaus; and Schussler, Rudolf, 4,523,853, Cl. 356-446.000.

Boeing Company, The: *See*—
Buitekant, Alan; and Dolliver, David M., 4,523,731, Cl. 244-137.00R.
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Bohn, Hans, to Behringwerke Aktiengesellschaft. Membrane-associated proteins (MP_2), a process for obtaining them, and their use. 4,524,027, Cl. 260-112.00R.

Bonassi, Luciano. Winch for sheet winding on seacrafts. 4,523,744, Cl. 254-371.000.

Bongartz, Heinz B.: *See*—
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Borchardt, John K., to Halliburton Company. Method of viscosifying aqueous fluids and process for recovery of hydrocarbons from subterranean formations. 4,524,003, Cl. 252-8.55R.

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Vaughan, James M., 4,524,179, Cl. 525-68.000.

Borg-Warner Corporation: *See*—
Boster, Clark S., 4,523,451, Cl. 73-37.600.
Browne, Vance d.; and Kochanek, George E., 4,523,474, Cl. 73-724.000.

Borsoi, Bruno, to Nordica S.p.A. Adjusting device particularly for ski boots. 4,523,395, Cl. 36-119.000.

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Boster, Clark S., to Borg-Warner Corporation. Hydraulic proximity probe. 4,523,451, Cl. 73-37.600.

Bottaccio, Giorgio: *See*—
Paffoni, Camillo; Carlini, Filippo M.; Bottaccio, Giorgio; and Osti, Alberto, 4,523,953, Cl. 106-23.000.

Bottka, Nicholas; Schwartz, Robert W.; and Thun, Wayne E., to United States of America, Navy. Deposition of compounds from multi-component organo-metals. 4,524,090, Cl. 427-53.100.

Bouffard, Jean; Dumoulin, Andre ; and Lederhose, Edgar K., to Northern Telecom Limited. Cradle for a twisting machine. 4,523,423, Cl. 57-59.000.

Bourlier, Claude P.; and Sallot, Louis E. Security apparatus for the passage of objects. 4,523,527, Cl. 109-19.000.

Bower, Allen M.; and Weeks, Gary L., to Emco Wheaton, Inc. Low flow control nozzle. 4,523,700, Cl. 222-505.000.

Bradley, Geoffrey; Hoarty, John T.; and Howarth, Ian M., to Internationale Octrooi Maatschappij "Octropa" B.V. Cementiferous compositions. 4,524,163, Cl. 524-5.000.

Bradshaw, John: *See*—
Price, Barry J.; Clitherow, John W.; Bradshaw, John; Martin-Smith, Michael; Judd, Duncan B.; and Hayes, Roger, 4,524,071, Cl. 514-272.000.

Brady, Michael M.: *See*—
Finn, Lyle D.; Volkert, Bruce C.; Matthews, Jamie F., Jr.; and Brady, Michael M., 4,523,877, Cl. 405-195.000.

Brady, Thomas R.; and Benner, Lester C., to Owens-Corning Fiberglas Corporation. Asphalt shingles - color blend drop sequence randomized by deposition means controlled by random signal generator to obviate stripes on roof. 4,523,543, Cl. 118-697.000.

Braetsch, Hartmut; and Herter, Karl, to Kaltenbach & Voight GmbH & Co. Foot-actuated control arrangment particularly for dental arrangment. 4,523,911, Cl. 433-101.000.

Brajder, Antonio; and Hantke, Klaus, to Siemens Aktiengesellschaft. Triangle waveform generator. 4,524,334, Cl. 331-135.000.

Brand, Peter: *See*—
Kline, James R.; and Brand, Peter, 4,523,713, Cl. 236-1.00C.

Brandt, Horst; Gehrke, Gunter; Muders, Rolf; Otten, Hans-Gunter; and Wiegner, Dieter, to Bayer Aktiengesellschaft. Mixtures of disperse dyestuffs. 4,523,926, Cl. 8-639.000.

Brandt, Maurice W.: *See*—
Spletzer, Barry; Swiatlowski, George J.; and Brandt, Maurice W., 4,523,377, Cl. 29-773.000.

Brankamp, Klaus; and Bongartz, Heinz B., to Brankamp, Klaus. Press apparatus for detecting a force occurring between two oppositely movable machine parts. 4,523,483, Cl. 73-862.540.

Brannen, Wyley W. Post-collision fire prevention device. 4,524,287, Cl. 307-10.00R.

Branscum, Tony E., to Gott Corporation. Combination ice screen and air vent for liquid container. 4,523,699, Cl. 222-189.000.

Braun Aktiengesellschaft: *See*—
Yamac, Yucel, 4,524,263, Cl. 219-249.000.

Braun, Karl; and Fetzer, Jurgen, to Intermedicat GmbH. Surgical stapler. 4,523,695, Cl. 227-8.000.

Braybrook, George E.; Corby, David C.; Shelton, Mark A.; and Shelton, William E. A., to Alan Shelton Limited. Handling of textile yarn. 4,523,441, Cl. 68-5.00C.

Brayman, Semyon. Method of measuring leak rates. 4,523,452, Cl. 73-40.000.

Breckinridge, James B.; and O'Callaghan, Fred G., to United States of America, National Aeronautics and Space Administration. Integrated optics in an electrically scanned imaging Fourier transform spectrometer. 4,523,846, Cl. 356-346.000.

Brentini, Attilio: *See—*
Martin, Jack, 4,523,442, Cl. 70-459.000.

Bretthauer, Hans J.: *See—*
Focke, Heinz; and Bretthauer, Hans J., 4,523,919, Cl. 493-212.000.

Breustedt, Alfred; Taschner, Heinz; Korf, Rainer; and Lorenz, Renate, to VEB Kombinat Medizin-und Labortechnik Leipzig. Mineral tooth with silane-coupled adhesive plastic part. 4,523,912, Cl. 433-202.000.

Briley, Patrick B., to Hybrid Energy Systems, Inc. Vehicle air conditioning system. 4,523,437, Cl. 62-238.400.

Brinegar, Billy W., to Scientific-Atlanta, Inc. Variable amplitude delay equalizer. 4,524,337, Cl. 333-28.00R.

Bristol-Myers Company: *See—*
Matson, James A., 4,524,145, Cl. 514-43.000.

British Aerospace Public Limited Company: *See—*
Frick, Heinz E., 4,523,729, Cl. 244-115.000.

Broding, Robert A., to Standard Oil Company (Indiana). High speed sonic logging using multiple transducers. 4,524,433, Cl. 367-25.000.

Brody, Hal. Gripping aid for the manually disabled. 4,523,781, Cl. 294-1.100.

Brody, Philip S., to United States of America, Army. Ferroelectric photomechanical actuators. 4,524,294, Cl. 310-311.000.

Brokke, Mervin E.; and Magee, Walter L., Jr., to Stauffer Chemical Company. Process for forming esters of glyoxylic acids. 4,524,214, Cl. 560-51.000.

Brooks, Harvey L., to Harrelson, Gary A., a part interest. Conductor identifying probe and voltage supply device. 4,524,320, Cl. 324-66.000.

Broussard, Paul P.: *See—*
Faul, Donald; Broussard, Paul P.; and Granger, Donald W., 4,523,453, Cl. 73-40.700.

Brown, Herbert J.; and Stitt, Thomas D., to General Electric Company. Speed reducing control system with voltage regulation for a polyphase electric motor. 4,524,316, Cl. 318-809.000.

Brown, Kevin E.: *See—*
Dickerson, James, 4,523,774, Cl. 280-655.000.

Browne, Vance d.; and Kochanek, George E., to Borg-Warner Corporation. Capacitive pressure sensor. 4,523,474, Cl. 73-724.000.

Brubaker, Thomas J. Model engine air filter. 4,523,937, Cl. 55-509.000.

Brunson, Welton K.: *See—*
Hubbard, Vance M.; and Brunson, Welton K., 4,523,353, Cl. 24-30.50R.

Brunsting, Albert; and Hogg, Walter R., to Coulter Electronics, Inc. Radiant energy reradiating flow cell system and method. 4,523,841, Cl. 356-73.000.

Brunswick Corporation: *See—*
Staerzl, Richard E., 4,523,572, Cl. 123-494.000.
Swisher, Steven L., 4,523,726, Cl. 242-84.20R.

Bruton, Gordon: *See—*
Stirling, Irene; Bruton, Gordon; Calvert, Stephen H.; and Clarke, Brian P., 4,524,073, Cl. 514-80.000.

Buchel, Urs; and Muther, Paul, to Ciba-Geigy Corporation. Solid disperse dye formulations containing non-ionic dispersants for transfer printing inks. 4,523,923, Cl. 8-524.000.

Buckley, W. D.: *See—*
Duly, Dawn L.; Windischmann, Henry; and Buckley, W. D., 4,523,974, Cl. 156-630.000.

Budai, Zsuzsanna: *See—*
Szejtli, Jozsef; Budai, Zsuzsanna; Radvany nee Hegedus, Erzsebet; Papp, Laszlo ; Kormoczy, Gyorgy; and Pap nee Imrenyi, Gabriella, 4,524,068, Cl. 514-58.000.

Budny, Thomas J.; Hollenbaugh, William H., Jr.; and Gutman, Edward J., to Xerox Corporation. Process for charging toner compositions. 4,524,120, Cl. 430-137.000.

Budzich, Tadeusz, to Caterpillar Tractor Co. Load responsive system. 4,523,431, Cl. 60-431.000.

Bueno, Alfredo, to Dynapac Maskin AB. Vibratory device. 4,523,486, Cl. 74-87.000.

Buitekant, Alan; and Dolliver, David M., to Boeing Company, The. External store release for flight vehicle. 4,523,731, Cl. 244-137.00R.

Bukhman, Yefim, to Motorola, Inc. Method for forming semiconductor devices. 4,523,976, Cl. 156-643.000.

Bukhman, Yefim: *See—*
Balda, Raymond J.; Bukhman, Yefim; and Goodner, Willis R., 4,523,372, Cl. 29-590.000.

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Belart, Juan; Burgdorf, Jochen; Kircher, Dieter; Bleckmann, Hans-Wilhelm; and Weise, Lutz, 4,523,791, Cl. 303-92.000.
Belart, Juan; and Burgdorf, Jochen, 4,523,792, Cl. 303-92.000.

Burgmaier, George J.: *See—*
Edwards, Larry D.; Sauter, Frederick J.; and Burgmaier, George J., 4,524,128, Cl. 430-353.000.

Burgyan, Lajos, to Signetics Corporation. Bipolar circuit for amplifying differential signal. 4,524,330, Cl. 330-257.000.

Burk, Ronnie F., to Deere & Company. Position sensing cylinder. 4,523,514, Cl. 92-5.00R.

Burkhardt, Fritz; and Antel, Otto. Locking device for tools in tool magazines. 4,523,367, Cl. 29-568.000.

Burkhardt, Kristin: *See—*
Laba, Dennis; Margres, John J., Jr.; and Burkhardt, Kristin, 4,524,062, Cl. 424-65.000.

Burnham, Stephen R.; and Henry, Paul M., to Burr-Brown Corporation. Band gap voltage reference circuit. 4,524,318, Cl. 323-313.000.

Burr-Brown Corporation: *See—*
Burnham, Stephen R.; and Henry, Paul M., 4,524,318, Cl. 323-313.000.

Burr, John D.: *See—*
Osterhout, Ralph F.; Burr, John D.; and Larson, Eric R., 4,523,379, Cl. 30-151.000.

Burroughs Corporation: *See—*
Page, David W., 4,524,430, Cl. 365-189.000.

Burt, Richard A.: *See—*
Baranyi, Giuseppa; Kazmaier, Peter M.; Hsiao, Cheng-Kuo; and Burt, Richard A., 4,524,218, Cl. 564-307.000.

Butt, Sheldon H., to Olin Corporation. Semiconductor packages. 4,524,238, Cl. 174-52.0FP.

C. G. Bevan Associates Limited: *See—*
Bevan, Christopher G., 4,524,039, Cl. 264-71.000.

C & I Joint Venture: *See—*
Foster, Richard L., 4,523,525, Cl. 104-173.0ST.

Cadbury Schweppes Limited: *See—*
Jeans, Edward L., 4,523,697, Cl. 222-185.000.

Cadillac Meter Company: *See—*
Johnson, Horace J., 4,523,479, Cl. 73-861.350.

Calvert, Stephen H.: *See—*
Stirling, Irene; Bruton, Gordon; Calvert, Stephen H.; and Clarke, Brian P., 4,524,073, Cl. 514-80.000.

Camilleri, Thomas M. Ball kicker. 4,523,756, Cl. 273-49.000.

Campbell, James F., to Paper Converting Machine Company. Apparatus for multiple lane stacking. 4,523,671, Cl. 198-422.000.

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Blaauw, Cornelis; Naguib, Hussein M.; Ahmed, Syed M.; and Aftab, Ahmad, 4,524,091, Cl. 427-74.000.

Canon Kabushiki Kaisha: *See—*
Arao, Kozo; and Sato, Tadashi, 4,523,803, Cl. 350-96.130.
Baba, Takeshi; Nose, Noriyuki; Yoshikawa, Hideo; Minoura, Kazuo; Hasu, Akinori; Minami, Setsuo; and Matsuoka, Kazuhiko, 4,523,801, Cl. 350-6.800.
Kato, Masatake, 4,523,828, Cl. 354-403.000.
Masunaga, Makoto; and Taka, Hideo, 4,523,827, Cl. 354-400.000.
Nagashima, Nao, 4,524,394, Cl. 358-296.000.
Suzuki, Takashi, 4,523,807, Cl. 350-128.000.
Yamada, Yu, 4,523,838, Cl. 355-66.000.

Cans, Yves; Gonda, Richard; and Tavernier, Marc, to Societe de Vente de L'Aluminium Pechiney. Process for high-speed vertical continuous casting of aluminium and alloys thereof. 4,523,627, Cl. 164-467.000.

Cantini, Maurizio, to Arnoldo Mondadori Editore S.p.A. Method and a device for attenuating pressure pulses through fluids, in particular for continuous paper web producing machines. 4,523,977, Cl. 162-259.000.

Cantwell, Gill. Magnetic transducer positioning apparatus. 4,524,400, Cl. 360-106.000.

Cappon, Douglas W.: *See—*
Fagen, Ben W., Jr.; and Cappon, Douglas W., 4,524,088, Cl. 427-10.000.

Carl-Zeiss-Stiftung: *See—*
Lang, Walter; Muller, Dieter; Muchel, Franz; Wanner, Roland; and Niesel, Peter, 4,523,821, Cl. 351-214.000.
Werner, Walter; Herzog, Klaus; and Szenger, Franz, 4,523,382, Cl. 33-169.00R.

Carl-Zeiss-Stiftung, Heidenheim/Brenz: *See—*
Biber, Klaus; Grunvogel, Karl; Lemcke, Ulrich; Jakubowski, Heinz; and Schulz, Kurt, 4,523,732, Cl. 248-123.100.
Herzog, Klaus, 4,523,450, Cl. 73-1.00J.
Lang, Walter H.; and Hornschu, Joachim, 4,523,818, Cl. 350-579.000.

Carlingswitch, Inc.: *See—*
Sorenson, Richard W., 4,524,253, Cl. 200-68.200.

Carlini, Filippo M.: *See—*
Paffoni, Camillo; Carlini, Filippo M.; Bottaccio, Giorgio; and Osti, Alberto, 4,523,953, Cl. 106-23.000.

Carlsen, W. John: *See—*
Melman, Paul; and Carlsen, W. John, 4,523,843, Cl. 356-127.000.

Carr, Paul L. I., to Imperial Chemical Industries Limited. Filament yarn. 4,523,427, Cl. 57-248.000.

Carrier Corporation: *See—*
Barrows, Kenneth C.; and Divers, Raymond T., 4,523,798, Cl. 339-192.0RL.
Lord, Richard G., 4,523,435, Cl. 62-212.000.
Schedel, John W.; and Lord, Richard G., 4,523,436, Cl. 62-222.000.

Cars & Concepts, Inc.: *See—*
Draper, David L.; and McKee, Gerald D., 4,523,785, Cl. 296-224.000.

Cartwright, Richard V., to Hercules Incorporated. Invert emulsion explosives containing a one-component oil phase. 4,523,967, Cl. 149-2.000.

Caruso, Bart P.: *See—*
Laws, Harold H.; Caruso, Bart P.; and Hascall, James G., 4,523,364, Cl. 29-33.00S.

Casket Shells, Inc.: *See—*
Simon, William J., 4,523,358, Cl. 27-6.000.

Caterpillar Tractor Co.: *See—*
Budzich, Tadeusz, 4,523,431, Cl. 60-431.000.
Lucas, Victor A., 4,523,397, Cl. 37-118.00R.
Mitchell, Randall M.; and Armstrong, John T., Jr., 4,523,892, Cl. 417-34.000.

Caulier, Paul W.: *See—*
Berrey, Harry R.; and Caulier, Paul W., 4,523,867, Cl. 400-124.000.
CDF Chimie, S.A.: *See—*
Pichat, Philippe; Niel, Michel; and Sinn, Robert, 4,523,954, Cl. 106-110.000.
Celamerck, Gesellschaft mit beschrankter Haftung & Co. KG: *See—*
Mengel, Rudolf; Schroder, Ludwig; Stransky, Werner; Linden, Gerbert; Schneider, Gerhart; and Lust, Sigmund, 4,523,945, Cl. 71-92.000.
Celanese Corporation: *See—*
Davenport, Kenneth G.; and Hilton, Charles B., 4,524,217, Cl. 564-223.000.
Eickman, Nancy C.; Fabisiak, Walter; and Dix, Robert, 4,524,101, Cl. 428-294.000.
Centra-Burkle GmbH & Co.: *See—*
Isermann, Rolf, 4,523,714, Cl. 236-46.00R.
Centre National de la Recherche Scientifique: *See—*
Bonnier, Georges; and Hermier, Yves, 4,523,859, Cl. 374-1.000.
Cerberus AG: *See—*
Muggli, Jurg; and Gruber, Peter, 4,524,281, Cl. 250-574.000.
Cesca, Sebastiano; Priola, Aldo; and Renzi, Fiorenzo, to Anic S.p.A. Process and a composition for coating a metallic substrate with a polymeric film. 4,524,092, Cl. 427-388.200.
Chabot, Ferdinand E., to Square D Company. Contact control arrangement for high amperage molded case circuit breaker. 4,524,339, Cl. 335-22.000.
Chaki, Takao; and Mogi, Mamoru, to Clarion Co., Ltd. Cross-arm mechanism in a pushbutton tuner. 4,523,485, Cl. 74-10.330.
Chalmers, Brian D.; Ruxton, David S.; and Miller, Kenneth L. Head positioning system for a disc data store. 4,524,397, Cl. 360-77.000.
Champagne, Edwin B., to United States of America, Air Force. Radar system for reducing angle tracking errors. 4,524,359, Cl. 343-16.00M.
Chamuel, Jacques R., to Charles Stark Draper Laboratory, Inc., The. Magneto-elastic material defect detector. 4,523,473, Cl. 73-643.000.
Chandler, Joseph A., to United States of America, National Aeronautics and Space Administration. Linear motion valve. 4,523,741, Cl. 251-325.000.
Chang, Clarence D.; and Miale, Joseph N., to Mobil Oil Corporation. Hydrothermal zeolite activation. 4,524,140, Cl. 502-61.000.
Chapman, Claude L. Load pickup coupling device and method. 4,523,746, Cl. 258-1.200.
Chapman, Ivan B., Jr., to AT&T Technologies, Inc. Ergonomical in-line tool. 4,523,498, Cl. 81-177.100.
Charles, Robert G.; and Hickam, William M., to Westinghouse Electric Corp. Method of separating cationic from anionic beads in mixed resin beds. 4,523,996, Cl. 210-504.000.
Charles Stark Draper Laboratory, Inc., The: *See—*
Chamuel, Jacques R., 4,523,473, Cl. 73-643.000.
De Fazio, Thomas L., 4,523,409, Cl. 51-165.710.
Charlot, Lincoln H., Jr., to Security Tag Systems, Inc. Ball clutch mechanism with two sets of balls in separate radial planes. 4,523,356, Cl. 24-155.0BR.
Chase, Karl L., to Sperry Corporation. Line pattern template generator. 4,524,353, Cl. 340-732.000.
Cheer, David A., to J.P. Products, Inc. Tube joint. 4,523,780, Cl. 285-399.000.
Chemical Process Corporation: *See—*
Viswanathan, Tito; and Richardson, Thomas, 4,524,164, Cl. 524-14.000.
Chemie und Filter GmbH Verfahrenstechnik KG: *See—*
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Chemplex Company: *See—*
Pullukat, Thomas J.; Hwang, Yu-Tang; and Dombro, Robert A., 4,524,141, Cl. 502-107.000.
Chen, Horng-Yih, to Du Pont de Nemours, E. I., and Company. Controlled initiation chromium dioxide synthesis. 4,524,008, Cl. 252-62.560.
Chen, Michael S.; Edwards, Thomas J.; and Ernst, William R., to Air Products and Chemicals, Inc. Catalytic hydrolysis of carbonyl sulfide. 4,524,050, Cl. 423-243.000.
Chen, Peter J.: *See—*
Allensworth, Dwight L.; and Chen, Peter J., 4,524,295, Cl. 310-328.000.
Cherry, Carl J.: *See—*
Gower, Irving W.; Cherry, Carl J.; and Yang, David S., 4,523,949, Cl. 75-24.000.
Chester, Arthur W.; Garwood, William E.; Lucki, Stanley J.; and Tabak, Samuel A., to Mobil Oil Corporation. Process for producing high viscosity index lubes. 4,524,232, Cl. 585-517.000.
Chevron Research Company: *See—*
Chin, Thomas G.; Klaver, Rudy F.; and Alston, Arthur, 4,523,860, Cl. 374-27.000.
Graf, Peter E.; and Goodrich, Judson E., 4,523,957, Cl. 106-277.000.
Thompson, Robert E., 4,523,804, Cl. 350-96.230.
Chia, Joan K.: *See—*
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Chibnik, Sheldon, to Mobil Oil Corporation. Polyester demulsifiers and compositions thereof. 4,524,007, Cl. 252-56.00R.
Child, James L., Jr.: *See—*
Fouss, James L.; Parker, John J.; Child, James L., Jr.; and Sting, Donald W., 4,523,613, Cl. 138-121.000.
Chin, Thomas G.; Klaver, Rudy F.; and Alston, Arthur, to Chevron Research Company. Gas saturation monitoring system and method. 4,523,860, Cl. 374-27.000.
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Chisso Corporation: *See—*
Yemoto, Jiichiro; Tarao, Ryokichi; and Yamamoto, Yoshio, 4,524,018, Cl. 252-522.00A.
Cho, James R.; and Johnson, Stephen C., to GAF Corporation. Polymeric sunscreens. 4,524,061, Cl. 424-60.000.
Christianson, Charles L.; and Spurlock, Richard, to United States of America, Navy. Radiation source shield and calibrator. 4,524,279, Cl. 250-497.100.
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Grady, Clyde C.; and Grady, Clyde C., II, 4,523,601, Cl. 135-22.000.
Ciba-Geigy Corporation: *See—*
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Fory, Werner; Gass, Karl; Meyer, Willy; and Schurter, Rolf, 4,523,944, Cl. 71-92.000.
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Scheibli, Peter, 4,523,925, Cl. 8-549.000.
Spivack, John D.; and Pastor, Stephen D., 4,524,166, Cl. 524-117.000.
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Yokoyama, Naokata, 4,524,146, Cl. 514-273.000.
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Citizen Watch Co., Ltd.: *See—*
Yoshioka, Junichi; Koizumi, Koichi; Kanai, Akira; and Shiba, Kazuo, 4,523,410, Cl. 51-166.00R.
Clarion Co., Ltd.: *See—*
Chaki, Takao; and Mogi, Mamoru, 4,523,485, Cl. 74-10.330.
Clarke, Brian P.: *See—*
Stirling, Irene; Bruton, Gordon; Calvert, Stephen H.; and Clarke, Brian P., 4,524,073, Cl. 514-80.000.
Clarke, Roy M.: *See—*
Gilding, Denis K.; and Clarke, Roy M., 4,524,036, Cl. 264-10.000.
Clayfield, Eric J.; Dixon, Arnold G.; and Miller, Richard J. L., to Shell Oil Company. Process for the removal of oil from an oil-in-water dispersion. 4,524,000, Cl. 210-649.000.
Cleary, Michael T.; Kulprathipanja, Santi; and Neuzil, Richard W., to UOP Inc. Process for separating fatty acids. 4,524,029, Cl. 260-419.000.
Cleary, Michael T.; Kulprathipanja, Santi; and Neuzil, Richard W., to UOP Inc. Process for separating fatty acids. 4,524,030, Cl. 260-419.000.
Clement, Gilles; Francois, Daniel; Marchal, Paul; and Moreau, Claude, to Commissariat A L'Energie Atomique. Remote manipulation assembly. 4,523,884, Cl. 414-8.000.
Clitherow, John W.: *See—*
Price, Barry J.; Clitherow, John W.; Bradshaw, John; Martin-Smith, Michael; Judd, Duncan B.; and Hayes, Roger, 4,524,071, Cl. 514-272.000.
Clopay Corporation: *See—*
Mortellite, Robert M., 4,523,620, Cl. 160-315.000.
Cobb, Bernie J., to United States of America, Army. Low cost antitank rocket motor structure. 4,523,524, Cl. 102-374.000.
Coca-Cola Company, The: *See—*
Barrash, Marshall J., 4,523,676, Cl. 206-150.000.
Cockrum, Charles A.; Chia, Joan K.; and Kreider, James F., to Hughes Aircraft Company. Anodizable metallic contacts to mercury cadmium telleride. 4,524,378, Cl. 357-71.000.
Coelho, Wagner C.: *See—*
Abdel-Hehim, Hossam A. A.; Coelho, Wagner C.; and Soares, Gloria M. G., 4,523,941, Cl. 71-37.000.
Cogliano, Joseph A., to W. R. Grace & Co. Asphalt foam. 4,524,156, Cl. 521-83.000.
Cohen, Melvin; and Duyne, Fred V., to Melrose Displays, Inc. Adjustable display apparatus. 4,523,722, Cl. 211-175.000.
Cohen, Sheppard; Barakitis, Nikolaos; Loughridge, Frederick A.; and Marlor, Richard C., to GTE Products Corporation. Compact fluorescent lamps. 4,524,301, Cl. 313-493.000.
Colgate-Palmolive Company: *See—*
Wixon, Harold E., 4,524,012, Cl. 252-174.000.
Collet, Georges. Attachable toothbrush. 4,523,599, Cl. 132-84.00D.
Collier, Richard D.: *See—*
Beastall, William H.; Ballew, Vernon R.; Collier, Richard D.; and Bagby, John T., 4,523,417, Cl. 52-273.000.
Colling, Jean M., to Framatome & Cie. Safety device. 4,524,449, Cl. 377-28.000.
Collins & Aikman Corp.: *See—*
Scott, Eddie W.; and Seltzer, Errol N., 4,523,426, Cl. 57-247.000.
Collins, George J.: *See—*
Sullivan, Paul A.; and Collins, George J., 4,523,370, Cl. 29-576.00B.
Collyer, Graham E.: *See—*
Bayne, Christopher J.; Lambert, Joseph L.; and Collyer, Graham E., 4,523,885, Cl. 414-156.000.
Combustion Engineering, Inc.: *See—*
Gower, Irving W.; Cherry, Carl J.; and Yang, David S., 4,523,949, Cl. 75-24.000.

Lubin, Barry T.; and Thompson, James P., 4,523,466, Cl. 73-579.000.
Maliszewski, Theodore V.; and Kohler, David E., 4,523,721, Cl. 241-61.000.

Commette, Denis S.; and LaMonica, Eugene R., to Gusmer Corporation. Apparatus for dispensing a mixture of mutually reactive liquids. 4,523,696, Cl. 222-135.000.

Commissariat A L'Energie Atomique: *See*—
Clement, Gilles; Francois, Daniel; Marchal, Paul; and Moreau, Claude, 4,523,884, Cl. 414-8.000.

Commonwealth Scientific and Industrial Research Organization: *See*—
George, Christopher W.; Sinha, Hari N.; Vujcich, Mary R.; and Walker, Graham S., 4,524,054, Cl. 423-308.000.

Compagnie Generale Des Etablissements Michelin: *See*—
Gouttebessis, Jacques, 4,523,619, Cl. 152-527.000.

Comtech Research Unit Limited: *See*—
Humberstone, Victor C., 4,524,116, Cl. 430-31.000.

Concast AG: *See*—
Navarro, Carlos R., 4,523,672, Cl. 198-461.000.

Conoco Inc.: *See*—
Coon, Julian B.; and Thomas, Bobby J., 4,523,651, Cl. 175-45.000.

Continental Group, Inc., The: *See*—
Walter, John, 4,523,540, Cl. 118-63.000.

Control Data Corporation: *See*—
Rank, William J., 4,523,796, Cl. 339-17.0CF.

Coon, Julian B.; and Thomas, Bobby J., to Conoco Inc. Coal auger guidance system. 4,523,651, Cl. 175-45.000.

Copeland, Robert J., to United States of America, Energy. Method and apparatus for operating an improved thermocline storage unit. 4,523,629, Cl. 165-1.000.

Corby, David C.: *See*—
Braybrook, George E.; Corby, David C.; Shelton, Mark A.; and Shelton, William E. A., 4,523,441, Cl. 68-5.00C.

Core Laboratories, Inc.: *See*—
Glodo, David O.; and McFaddin, James, 4,524,420, Cl. 364-497.000.

Cornelius, Erwin D., to M & W Gear Company. Door operating mechanism for gravity type farm wagon. 4,523,690, Cl. 220-262.000.

Cornell Research Foundation, Inc.: *See*—
Ast, Dieter G., 4,523,625, Cl. 164-461.000.

Cornick, John A., to U.S. Philips Corporation. Corrugated semiconductor device. 4,524,376, Cl. 357-55.000.

Cosper, David R.; and McKay, Gretchen L., to Nalco Chemical Company. Hydrotropes and uses thereof. 4,523,932, Cl. 55-85.000.

Cottatelucci, Ezio, to Italtel Societa Italiana Telecomunicazioni S.p.A. System for jointly transmitting high-frequency and low-frequency digital signals over a fiber-optical carrier. 4,524,462, Cl. 455-608.000.

Cotton, John F., to Westinghouse Electric Corp. Ganged circuit breaker arrangement. 4,524,338, Cl. 335-8.000.

Cottrell, John S.; Turner, Patrick J.; and Kay, David J. Multiple collector mass spectrometers. 4,524,275, Cl. 250-298.000.

Coulter Electronics, Inc.: *See*—
Brunsting, Albert; and Hogg, Walter R., 4,523,841, Cl. 356-73.000.

Couri, Mark S., to Sundstrand Corporation. Protective cover for a limb or a cast. 4,523,586, Cl. 128-82.000.

Courser, Incorporated: *See*—
King, Charles, 4,524,282, Cl. 250-577.000.

Courtis, Andrew: *See*—
Ballard, Denis G. H.; Courtis, Andrew; and Shirley, Ian M., 4,524,198, Cl. 526-292.100.

Courtney, Edward, Jr.: *See*—
Hearn, Patrick L.; and Courtney, Edward, Jr., 4,523,375, Cl. 29-605.000.

Courtois, Bernard: *See*—
Letournoux, Alain; and Courtois, Bernard, 4,523,786, Cl. 297-367.000.

Covey, Robert L.; and Gale, Michael T., to RCA Corporation. System for positioning a body. 4,523,850, Cl. 356-375.000.

Crane, Laura J.; and Ramsden, Hugh E., to J. T. Baker Chemical Company. Affinity chromatography matrix with built-in reaction indicator. 4,523,997, Cl. 210-635.000.

Creusot-Loire: *See*—
Lhenry, Bernard; and Roustan, Max, 4,523,896, Cl. 417-244.000.

Cristobal, Carlos C.: *See*—
Palacio, Joaquin J.; and Cristobal, Carlos C., 4,523,419, Cl. 52-690.000.

Crocker, David R.; Stelling, Desi D.; and Larson, Francis W., to Sperry Corporation. High speed solid state multiplexer. 4,524,443, Cl. 370-112.000.

Cronin, Michael J., to Lockhead Corporation. All electric environmental control system for advanced transport aircraft. 4,523,517, Cl. 98-1.500.

Cross, Carroll N. Display mount apparatus and method. 4,523,399, Cl. 40-119.000.

Cselt - Centro Studi E Laboratori Telecomunicazioni S.p.A.: *See*—
Grego, Giorgio, 4,523,938, Cl. 65-2.000.

Cuel, Jacques, to Beghin-Say S.A. Method for drying by vapor recompression. 4,523,388, Cl. 34-35.000.

Cuomo, Jerome J.; Harper, James M. E.; Kaufman, Harold R.; and Speidell, James L., to International Business Machines Corporation. Programmable ion beam patterning system. 4,523,971, Cl. 156-345.000.

Cuozzo, Anthony; and Achee, John D., to Torrington Company, The. Method of making a roller bearing assembly. 4,523,362, Cl. 29-148.40A.

Curatolo, Joseph A., Jr.: *See*—
Renshaw, Theodore A.; and Curatolo, Joseph A., Jr., 4,523,710, Cl. 228-111.000.

Curti, Paolo. Apparatus for recovery of heat from fumes in a heating system or from the ambient air. 4,523,438, Cl. 62-238.600.

Cushman, Robert H.; and Stout, Charles E., Jr., to AT&T Technologies, Inc. Method of and apparatus for handling crystal ingots. 4,523,972, Cl. 156-617.0SP.

Cygnet Technologies, Inc.: *See*—
Faggin, Federico; Klein, Jerry A.; Yazolino, Lauren F.; Korody, Robert G.; Ha, Eric P. L.; and Kerman, Stephen, 4,524,244, Cl. 179-2.0DP.

Daftary, Shashikumar H.: *See*—
Streetman, William E.; and Daftary, Shashikumar H., 4,524,105, Cl. 428-364.000.

Daghe, Joseph L.; Sands, Robert E.; and Humes, Dennis W., to Mueller Co. Backflow preventer apparatus. 4,523,607, Cl. 137-218.000.

Daikin Kogyo Co., Ltd.: *See*—
Masuda, Kenji, 4,523,430, Cl. 60-420.000.
Misaki, Susumu; Ishii, Sadamu; and Suefuji, Masahiro, 4,524,032, Cl. 260-465.00F.

Daimler-Benz Aktiengesellschaft: *See*—
Bayer, Ulrich; and Ochs, Siegfried, 4,523,457, Cl. 73-114.000.
Kizler, Wolfgang; Sieder, Wolfgang; Schopf, Hans-Joachim; Dobler, Helmut; and Gluck, Roland, 4,523,916, Cl. 464-98.000.
Schnapper, Martin; and Hufendiek, Ernst W., 4,523,562, Cl. 123-357.000.

Dainippon Screen Manufacturing Co., Ltd.: *See*—
Nagashima, Masato; Katsuyama, Mikizo; and Yamamoto, Masahiro, 4,523,805, Cl. 350-96.240.

Dainippon Screen Seizo Kabushiki Kaisha: *See*—
Araki, Shuichi; and Hashiyama, Hideshi, 4,524,456, Cl. 382-56.000.

Dallessandro, Susan M.: *See*—
Tasset, Emmett L.; Dallessandro, Susan M.; and Richey, Warren F., 4,524,011, Cl. 252-171.000.

Dana Corporation: *See*—
Schildt, Walter C., 4,523,917, Cl. 474-19.000.

Danfoss A/S: *See*—
Johansen, Claus J.; Jark, Jens K.; and Stefansson, Thorvardur S., 4,523,739, Cl. 251-139.000.

Daniel, Kelvin J., to Keldan Industries Limited. Injector tester. 4,523,458, Cl. 73-119.00A.

Daniel, Rollin K., to Rollin K. Daniel P.S.C. Anastomotic coupling means capable of end-to-end and end-to-side anastomosis. 4,523,592, Cl. 128-334.00C.

Danner, Helmut: *See*—
Thevis, Paul; Danner, Helmut; and Weisser, Erich, 4,523,509, Cl. 89-129.020.

Dantzig, Jonathan A.; Sevier, Peter E.; and Ungarean, Gary L., to International Telephone and Telegraph Corporation. Cast ingot position control process and apparatus. 4,523,624, Cl. 164-454.000.

Darwall, Edward C. D.: *See*—
Groves, Christopher K.; Duncan, Kevin; and Darwall, Edward C. D., 4,523,975, Cl. 156-643.000.

Das, Jagabandhu; and Haslanger, Martin F., to E. R. Squibb & Sons, Inc. 7-Oxabicycloheptane thio ethers useful as cardiovascular agents. 4,524,151, Cl. 514-469.000.

da Silva, Edouard F.: *See*—
Delhaye, Michel M.; Dhamelincourt, Paul A.; da Silva, Edouard F.; and Barbillat, Jacques H., 4,523,799, Cl. 350-6.300.

Dassler, Armin A., to Puma-Sportschuhfabriken Rudolf Dassler KG. Athletic shoe having spike or stud-shaped cleats exchangeably arranged at the running sole. 4,523,396, Cl. 36-134.000.

Datafile Limited: *See*—
Barber, Donald T., 4,523,776, Cl. 283-39.000.

Dataproducts Corporation: *See*—
Wolf, Peter H.; Dobson, Thomas A.; and Rozo, Rafael, 4,524,259, Cl. 219-69.00R.

Datwyler, Peter: *See*—
Gfeller, Karl; and Datwyler, Peter, 4,523,824, Cl. 354-161.000.

Davenport, Kenneth G.; and Hilton, Charles B., to Celanese Corporation. Process for producing N-acyl-hydroxy aromatic amines. 4,524,217, Cl. 564-223.000.

Davis, Larry; and Klein, Joseph T., to Hoechst-Roussel Pharmaceuticals Inc. 6-Fluoro-3-[3-(1-heterocyclo)propyl]-1,2-benzisoxazoles. 4,524,209, Cl. 546-148.000.

Debono, Manuel: *See*—
Abbott, Bernard J.; Debono, Manuel; and Fukuda, David S., 4,524,135, Cl. 435-69.000.

De Cock, Etienne M.; De Schamphelaere, Lucien A.; Librecht, Freddy M.; and Van Peteghem, Willy F., to AGFA-Gevaert N.V. Recording apparatus. 4,524,372, Cl. 346-160.000.

Deeken, David G.: *See*—
Richart, Jene A.; Beitler, Bradley D.; and Deeken, David G., 4,523,878, Cl. 405-195.000.

Deere & Company: *See*—
Burk, Ronnie F., 4,523,514, Cl. 92-5.00R.
Dettmer, Larry A., 4,523,766, Cl. 279-4.000.
Keenan, Thomas F.; and Kass, John J., 4,523,655, Cl. 180-9.100.
Prasad, Keni K., 4,523,788, Cl. 298-11.000.
Sparks, Gregory E.; and Larson, David A., 4,523,494, Cl. 74-710.500.
Wei*ß*, Heinz, 4,523,493, Cl. 74-695.000.

Deering, Roland F.; and Duir, John H., to Union Oil Company of California. Apparatus for recovery of retorted shale from an oil shale retorting process. 4,523,979, Cl. 202-99.000.

De Fazio, Thomas L., to Charles Stark Draper Laboratory, Inc., The. Automatic contour grinding system. 4,523,409, Cl. 51-165.710.
Defosse, Georges; and Hensenne, Joseph, to Ateliers de Constructions Electriques de Charleroi. Apparatus for propelling an inflated ball. 4,523,573, Cl. 124-41.00R.
Degen, Peter J.: *See—*
Pall, David B.; Degen, Peter J.; Joffee, Irving B.; Foss, Warren M.; and Gsell, Thomas C., 4,523,995, Cl. 210-504.000.
de Grandpre, Mark P.: *See—*
Gleim, Robert D.; and de Grandpre, Mark P., 4,524,121, Cl. 430-176.000.
Degussa Aktiengesellschaft: *See—*
Drauz, Karlheinz; Koban, Hans G.; Martens, Jurgen; and Schwarze, Werner, 4,524,211, Cl. 548-111.000.
Wolff, Siegfried; and Golombeck, Paul, 4,524,169, Cl. 524-263.000.
Dejaifve, Pierre E.; and Quillaud, Gerard, to Shell Oil Company. Process for the preparation of a hydrogen-rich gas. 4,524,058, Cl. 423-656.000.
Delbar Products, Inc.: *See—*
Beck, Marlin E.; and McFarland, Robert W., 4,523,735, Cl. 248-476.000.
Delhaye, Michel M.; Dhamelincourt, Paul A.; da Silva, Edouard F.; and Barbillat, Jacques H., to Agence Nationale de Volorisation de la Recherche (ANVAR). Device optimizing the coupling of two optical systems for the observation and analysis of objects. 4,523,799, Cl. 350-6.300.
Demro Products, Inc.: *See—*
Wilhelm, Gary, 4,523,510, Cl. 89-141.000.
Denda, Masahiko; and Tsubouchi, Natsuro, to Mitsubishi Denki K.K. Device for detecting infrared rays. 4,524,374, Cl. 357-15.000.
Denisot, Bernard A., to Societe Laitiere de Veron. Refrigerated display unit. 4,523,439, Cl. 62-251.000.
Dennison Manufacturing Company: *See—*
Thurlow, John F., 4,523,956, Cl. 106-243.000.
Derkacs, Thomas; Matay, Istvan M.; Murphy, Stephan D.; and Touhalisky, John, to TRW Inc. Phased array inspection of cylindrical objects. 4,523,468, Cl. 73-598.000.
de Rooij, Jacobus A. G., to U.S. Philips Corporation. Camera for picking-up colored pictures. 4,524,383, Cl. 358-55.000.
Desai, Nitin V., to RCA Corporation. Record turntable and polymeric coating thereon. 4,524,109, Cl. 428-523.000.
De Schamphelaere, Lucien A.: *See—*
De Cock, Etienne M.; De Schamphelaere, Lucien A.; Librecht, Freddy M.; and Van Peteghem, Willy F., 4,524,372, Cl. 346-160.000.
Dettmer, Larry A., to Deere & Company. Chuck assembly. 4,523,766, Cl. 279-4.000.
Deutsche Texaco Aktiengesellschaft: *See—*
Helbig, Klaus; and Pusch, Guenther, 4,524,435, Cl. 367-41.000.
Devry, William E., to B. F. Goodrich Company, The. Fabric coating composition with low formaldehyde evolution. 4,524,093, Cl. 427-389.900.
DeYoreo, Sal G., to Armatron International, Inc. Insect killing device with removable electrically conductive grid. 4,523,404, Cl. 43-112.000.
Dhamelincourt, Paul A.: *See—*
Delhaye, Michel M.; Dhamelincourt, Paul A.; da Silva, Edouard F.; and Barbillat, Jacques H., 4,523,799, Cl. 350-6.300.
Dianitsch, Franz; and Pschebezin, Anton, to Optyl Eyewear Fashion International Corporation. Eyeglasses with exchangeable lenses. 4,523,819, Cl. 351-106.000.
Dickerson, James, to Brown, Kevin E. Collapsible tow cart. 4,523,774, Cl. 280-655.000.
Dickinson, Ben W. O., III. Downhole instrument including a flexible probe which can travel freely around bends in a borehole. 4,524,324, Cl. 324-323.000.
Dickore, Karlfried: *See—*
Bonse, Gerhard; Lantzsch, Reinhard; Dorr, Henning; Kreiss, Wolfgang; Dickore, Karlfried; Ditgens, Klaus; and Kranz, Eckart, 4,524,205, Cl. 544-223.000.
Diederichs, Rolf; and Volkmann, Klaus, to Krautkramer-Branson, Inc. Method and apparatus for resonant sensing device. 4,523,467, Cl. 73-573.000.
Diesel Equipment Limited: *See—*
Martin, Paul H.; and Martin, John C., 4,523,898, Cl. 417-269.000.
Diesel Kiki Co., Ltd.: *See—*
Furukawa, Kenji; and Wakabayashi, Shinji, 4,523,633, Cl. 165-76.000.
DiFiore, Dante. Auxiliary drainage system for eliminating water problems associated with a foundation of a building. 4,523,875, Cl. 405-50.000.
Diggle, Edmund A., Jr.; and Krajcovic, John, to Samcoe Holding Corporation. Apparatus for drying tubular knitted fabric. 4,523,389, Cl. 34-105.000.
Digital Equipment Corp.: *See—*
Hearn, Patrick L.; and Courtney, Edward, Jr., 4,523,375, Cl. 29-605.000.
Dillman, Glen W.: *See—*
Dillman, Thomas G.; and Dillman, Glen W., 4,524,265, Cl. 235-95.00R.
Dillman, Thomas G.; and Dillman, Glen W. Mechanical acreage counter. 4,524,265, Cl. 235-95.00R.
Dillon, Paul: *See—*
Stumpf, Walter; and Dillon, Paul, 4,523,344, Cl. 5-477.000.
Di Luccio, Robert C., to Du Pont de Nemours, E. I., and Company. Coextruded elastomeric films. 4,524,099, Cl. 428-213.000.
Dimock, Jack A., to Sputtered Films, Inc. Wafer processing machine. 4,523,985, Cl. 204-298.000.
Disanza, William G., Jr. Separation-chamber means. 4,523,936, Cl. 55-429.000.
Discovision Associates: *See—*
Efron, Edward; McPherson, James O.; and Kim, Young B., 4,524,444, Cl. 371-24.000.
Dismukes, Newton B. Thermal oil recovery method. 4,523,644, Cl. 166-302.000.
Ditgens, Klaus: *See—*
Bonse, Gerhard; Lantzsch, Reinhard; Dorr, Henning; Kreiss, Wolfgang; Dickore, Karlfried; Ditgens, Klaus; and Kranz, Eckart, 4,524,205, Cl. 544-223.000.
Dittmann, Fred M., Jr., to Municipal Industries, Inc. Motorcycle transmission featuring reverse gear. 4,523,491, Cl. 74-360.000.
Divers, Raymond T.: *See—*
Barrows, Kenneth C.; and Divers, Raymond T., 4,523,798, Cl. 339-192.0RL.
Dix, Robert: *See—*
Eickman, Nancy C.; Fabisiak, Walter; and Dix, Robert, 4,524,101, Cl. 428-294.000.
Dixon, Arnold G.: *See—*
Clayfield, Eric J.; Dixon, Arnold G.; and Miller, Richard J. L., 4,524,000, Cl. 210-649.000.
Dixon Automatic Tool, Inc.: *See—*
Dixon, Paul H., 4,523,490, Cl. 74-582.000.
Dixon, Paul H., 4,523,511, Cl. 91-24.000.
Dixon, Paul H., to Dixon Automatic Tool, Inc. Machine for handling parts. 4,523,490, Cl. 74-582.000.
Dixon, Paul H., to Dixon Automatic Tool, Inc. Reciprocating fluid-operated actuator with deceleration control. 4,523,511, Cl. 91-24.000.
Dlubala, Joseph C. Collapsible cart-stand. 4,523,768, Cl. 280-42.000.
Dobler, Helmut: *See—*
Kizler, Wolfgang; Sieder, Wolfgang; Schopf, Hans-Joachim; Dobler, Helmut; and Gluck, Roland, 4,523,916, Cl. 464-98.000.
Dobson, Charles E. Sign construction. 4,523,402, Cl. 40-606.000.
Dobson, Thomas A.: *See—*
Wolf, Peter H.; Dobson, Thomas A.; and Rozo, Rafael, 4,524,259, Cl. 219-69.00R.
Dr. Ing. h.c.F. Porsche A.G.: *See—*
Dorsch, Heinz; Hofbauer, August; and Steinbeck, Herbert, 4,523,568, Cl. 123-453.000.
Dolliver, David M.: *See—*
Buitekant, Alan; and Dolliver, David M., 4,523,731, Cl. 244-137.00R.
Dolsky, Thomas P., to Life Products, Inc. Protective pillow assembly. 4,523,588, Cl. 128-201.250.
Dombro, Robert A.: *See—*
Pullukat, Thomas J.; Hwang, Yu-Tang; and Dombro, Robert A., 4,524,141, Cl. 502-107.000.
Domeier, Linda A., to Union Carbide Corporation. Low shrinking curable molding compositions containing a poly(acrylate). 4,524,162, Cl. 523-438.000.
Donovan, Marion. Dental flossing product. 4,523,600, Cl. 132-89.000.
Dorman, Isidore, to aNB Jackets de Puerto Rico. Multi-channel transparent microfilm jacket. 4,523,401, Cl. 40-159.000.
Dorr, Henning: *See—*
Bonse, Gerhard; Lantzsch, Reinhard; Dorr, Henning; Kreiss, Wolfgang; Dickore, Karlfried; Ditgens, Klaus; and Kranz, Eckart, 4,524,205, Cl. 544-223.000.
Dorsch, Heinz; Hofbauer, August; and Steinbeck, Herbert, to Dr. Ing. h.c.F. Porsche A.G. Continuously operating fuel injection system. 4,523,568, Cl. 123-453.000.
Dow Chemical, Belgium, S.A.: *See—*
Otte, Joseph N. A., 4,523,960, Cl. 127-46.200.
Dow Chemical Company, The: *See—*
Akers, James B., Jr.; Leng, Douglas E.; and Normand, Randall J., 4,524,189, Cl. 525-35.00G.
Arndt, Kim E.; McCormick, Ronald W.; and Rogers, Richard B., 4,523,940, Cl. 71-11.000.
Hefner, Robert E., Jr.; Martin, Patrick H.; and Stevens, Gregory A., 4,524,178, Cl. 525-28.000.
Lee, George A.; and Rains, Randall C., 4,523,982, Cl. 204-159.150.
Meyer, Wilfred C.; and Jakubowski, James J., 4,523,991, Cl. 209-166.000.
Pedersen, David R.; and Tong, Curtis M., 4,523,464, Cl. 73-216.000.
Stanley, Frederick W., Jr., 4,524,175, Cl. 524-831.000.
Sun, Yun C., 4,524,180, Cl. 525-71.000.
Tasset, Emmett L.; Dallessandro, Susan M.; and Richey, Warren F., 4,524,011, Cl. 252-171.000.
Dow Corning Corporation: *See—*
Greco, Alberto; Bertolini, Guglielmo; and Zavattini, Omero, 4,524,187, Cl. 525-332.100.
Doyle, Richard H.; and Fiori, Lee B., to Duo-Fast Corporation. Fastener driving tool. 4,523,646, Cl. 173-15.000.
Draper, David L.; and McKee, Gerald D., to Cars & Concepts, Inc. Latch mechanism for hinged panels. 4,523,785, Cl. 296-224.000.
Drauz, Karlheinz; Koban, Hans G.; Martens, Jurgen; and Schwarze, Werner, to Degussa Aktiengesellschaft. Process for the production of substituted phosphonic and phosphinic acids and thiazolidinyl phosphonic and phosphinic acid ester intermediates. 4,524,211, Cl. 548-111.000.
Dresser Industries, Inc.: *See—*
Hubner, Bernard G., 4,524,273, Cl. 250-269.000.
McGlothen, Jody R., 4,523,643, Cl. 166-297.000.

Sehnert, Steven D.; McClure, Gerald B.; and McPhee, William A., 4,523,650, Cl. 175-4.560.
Wilson, Herbert C.; and Sankaran, Perumalagaram S., 4,523,640, Cl. 166-64.000.

Drexhage, Karl H., to Eastman Kodak Company. Process for replacing anions or organic cationic salts. 4,524,204, Cl. 544-103.000.

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Doyle, Richard H.; and Fiori, Lee B., 4,523,646, Cl. 173-15.000.

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Adalsteinsson, Orn, 4,524,150, Cl. 514-469.000.
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Levitt, George, 4,523,943, Cl. 71-90.000.

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Cohen, Melvin; and Duyne, Fred V., 4,523,722, Cl. 211-175.000.

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Schmidt, Hans-Georg, 4,524,216, Cl. 560-70.000.

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Besemann, Alfred, 4,523,502, Cl. 83-71.000.

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Das, Jagabandhu; and Haslanger, Martin F., 4,524,151, Cl. 514-469.000.
Gordon, Eric M.; and Godfrey, Jollie D., Jr., 4,524,212, Cl. 548-533.000.

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Lemke, James U., 4,524,390, Cl. 358-213.000.
Musser, Harry R.; Strickland, Thomas H.; and Zannucci, Joseph S., 4,524,165, Cl. 524-99.000.
Weber, Lynda D.; Merkel, Paul B.; and Warren, Harold C., III, 4,524,122, Cl. 430-223.000.

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Ouchi, Kiyoshi, 4,523,899, Cl. 417-360.000.

Eberling, Igor L.; Tereschenko, Lev A.; Nikolaev, Nikolai I.; Yakovlev, Arian M.; Kovalenko, Vitaly I.; Lipatov, Nikolai K.; Tatevosian, Ruben A.; and Titov, Mikhail Y., to Territorialnoe Geolgicheskoe Upravlenie Tsentralnykh Raionov. Method for the determination of kinetics of structure formation in a binder. 4,524,319, Cl. 324-65.00R.

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Eckert, Alton B.; and McFiggans, Robert B., to Pitney Bowes Inc. Electronic postage meter controllable by mailing machine. 4,524,426, Cl. 364-900.000.

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Nakatani, Kaname; Miyakawa, Nobuhiro; Higashiguchi, Teruaki; and Edo, Tomomi, 4,524,118, Cl. 430-56.000.

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Chen, Michael S.; Edwards, Thomas J.; and Ernst, William R., 4,524,050, Cl. 423-243.000.

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Eibeck, Richard E.: *See*—
Luly, Matthew H.; Lockyer, George D., Jr.; Eibeck, Richard E.; and Gaynor, Joseph, 4,524,119, Cl. 430-108.000.

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Schippers, Heinz; Hertell, Siegfried; and Eich, Otwin, 4,523,901, Cl. 417-395.000.

Eickman, Nancy C.; Fabisiak, Walter; and Dix, Robert, to Celanese Corporation. High modulus polyethylene fiber bundles as reinforcement for brittle matrices. 4,524,101, Cl. 428-294.000.

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Temple, Russell A.; Wesseler, Martin G.; Harper, David C.; Eiland, Harry F.; and Tellkamp, Robert G., 4,523,837, Cl. 355-51.000.

Einhaus, Hermanus F., to U.S. Philips Corporation. Record player with hinged dust cover. 4,524,438, Cl. 369-75.100.

Ejiri, Koichi, to Ricoh Company, Ltd. Method of assigning direction code to boundary picture element in character recognition system. 4,524,454, Cl. 382-21.000.

Ekholm, Carl R., to Standex International Corporation. Chiropractic table cushion drop release mechanism. 4,523,581, Cl. 128-70.000.

Elektroschmelzwerk Kempten GmbH: *See*—
Schwetz, Karl A.; Reinmuth, Klaus; Hunold, Klaus; and Isemann, Franz, 4,524,138, Cl. 501-90.000.

Elermetal: *See*—
Muller, Roger, 4,523,446, Cl. 72-71.000.

Elfes, Vean: *See*—
Schiedegger, Charles E.; and Elfes, Vean, 4,524,096, Cl. 428-68.000.

Eli Lilly and Company: *See*—
Abbott, Bernard J.; Debono, Manuel; and Fukuda, David S., 4,524,135, Cl. 435-69.000.

Elledge, Jefferson D. Multiple fuel carburetor. 4,524,033, Cl. 261-18.00B.

Elliot, Robert B. Vibratory roller with axially spaced zig zag impact bars and wire rope cleaners. 4,523,873, Cl. 404-124.000.

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Hsu, Chao-Yang; Lyons, James E.; and Ellis, Paul E., Jr., 4,524,142, Cl. 502-153.000.

Ellison, Benjamin L. Carburetor. 4,524,034, Cl. 261-44.00A.

Elmaleh, David R.; and Livni, Eli, to General Hospital Corporation, The. Fatty acid analogs. 4,524,059, Cl. 424-1.100.

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Johst, Willy; and Elsass, Henrik, 4,523,893, Cl. 417-68.000.

Emco Wheaton, Inc.: *See*—
Bower, Allen M.; and Weeks, Gary L., 4,523,700, Cl. 222-505.000.

Emhart Industries, Inc.: *See*—
Martin, Hans, 4,524,270, Cl. 235-494.000.

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Flasck, James D., 4,524,106, Cl. 428-408.000.

Eng, Wing K., to AT&T Bell Laboratories. Peak current controlled converter with additional current threshold control level to limit current tailout during overload conditions. 4,524,412, Cl. 363-56.000.

Engel, Larry J.; and Turko, John W., to Michigan Consolidated Gas Company. Gaseous hydrocarbon fuel storage system and power plant for vehicles. 4,523,548, Cl. 123-1.00A.

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Martin, John S., 4,523,730, Cl. 244-122.00R.

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Holsztynski, Wlodzimierz; and Wilson, Stephen S., 4,524,455, Cl. 382-41.000.

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Ernest, Ivan: *See*—
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Ernest, John H.: *See—*
Fasching, George E.; Evans, Donald M.; and Ernest, John H., 4,523,465, Cl. 73-290.00V.
Ernst, William R.: *See—*
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Estela, Carlos: *See—*
Miller, Richard L.; and Estela, Carlos, 4,523,931, Cl. 55-80.000.
Ethyl Corporation: *See—*
Walter, Thomas J.; and Ranken, Paul F., 4,524,203, Cl. 544-94.000.
Weidig, Charles F., 4,524,222, Cl. 568-711.000.
Evans, Donald M.: *See—*
Fasching, George E.; Evans, Donald M.; and Ernest, John H., 4,523,465, Cl. 73-290.00V.
Evans, Thomas E., to Texas Instruments Incorporated. Method and apparatus for assembling electrical contact elements in an electrically insulative body. 4,523,378, Cl. 29-881.000.
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Vessey, John R.; Patel, Chandrakant M.; and Armstrong, Jack, 4,523,673, Cl. 198-486.000.
Exertier, Michel, to Rhone-Poulenc Industries. Purification of sugar-cane juice. 4,523,959, Cl. 127-46.200.
Exxon Production Research Co.: *See—*
Finn, Lyle D.; Volkert, Bruce C.; Matthews, Jamie F., Jr.; and Brady, Michael M., 4,523,877, Cl. 405-195.000.
Finucane, Raymond G.; and Jahns, Hans O., 4,523,879, Cl. 405-217.000.
Richart, Jene A.; Beitler, Bradley D.; and Deeken, David G., 4,523,878, Cl. 405-195.000.
Exxon Research & Engineering Co.: *See—*
Duvdevani, Ilan; Eckert, John A.; Schulz, Donald N.; and Kitano, Kissho, 4,523,929, Cl. 44-62.000.
Ezaki, Sazo: *See—*
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Fabisiak, Walter: *See—*
Eickman, Nancy C.; Fabisiak, Walter; and Dix, Robert, 4,524,101, Cl. 428-294.000.
Fagen, Ben W., Jr.; and Cappon, Douglas W., to Magnetic Technologies Corp. Method and apparatus for controlling the thickness of developer on an applicator, such as a magnetic brush, in electrostatic reproduction. 4,524,088, Cl. 427-10.000.
Faggin, Federico; Klein, Jerry A.; Yazolino, Lauren F.; Korody, Robert G.; Ha, Eric P. L.; and Kerman, Stephen, to Cygnet Technologies, Inc. Digital and voice telecommunication apparatus. 4,524,244, Cl. 179-2.0DP.
Fairchild Industries, Inc.: *See—*
Renshaw, Theodore A.; and Curatolo, Joseph A., Jr., 4,523,710, Cl. 228-111.000.
Faith, Richard W., to Orion Industries, Inc. High input impedance amplifier circuit. 4,524,331, Cl. 330-292.000.
Farber, Mark I., to Resource Associates International Corp. Precious metal recovery apparatus. 4,523,993, Cl. 210-297.000.
Farmer, Audley J.: *See—*
Andreini, Rockne J.; Farmer, Audley J.; and Yaguchi, Svetlana, 4,523,951, Cl. 75-126.00B.
Farnham, William B.; and Sogah, Dotsevi Y., to Du Pont de Nemours, E. I., and Company. Process for preparing "living" polymers. 4,524,196, Cl. 526-190.000.
Farrell, Charles F., to Texas Instruments Incorporated. Keyboard switch assembly. 4,524,249, Cl. 200-5.00A.
Fasching, George E.; Evans, Donald M.; and Ernest, John H., to United States of America, Energy. Wireless remote liquid level detector and indicator for well testing. 4,523,465, Cl. 73-290.00V.
Faste, Heinrich; and Bindernagel, Ali, to Kocks Technik GmbH & Co. Method of manufacturing hollow metal ingots. 4,523,622, Cl. 164-66.100.
Fathauer, George H.; Fowler, James M., Jr.; Rylicki, Edward J.; and Mason, Edwin E., to Masco Corporation of Indiana. Electronic air filtering apparatus. 4,523,463, Cl. 73-204.000.
Faul, Donald; Broussard, Paul P.; and Granger, Donald W., to Testrac, Inc. Method for determining borehole or cavity configuration through inert gas interface. 4,523,453, Cl. 73-40.700.
Faulconer, Mark; and Langton, Allan R., to U.S.D. Corp. Conformable buoyancy compensator. 4,523,914, Cl. 441-108.000.
Fechner, Wolf D.; Polster, Rudolf; Kranz, Joachim; and Hartmann, Eduard, to BASF Aktiengesellschaft. Pigment formulations and their use of pigmenting gravure printing inks and finishes. 4,523,958, Cl. 106-288.00Q.
Federal-Mogul Corporation: *See—*
Hinderer, Robert F., 4,524,185, Cl. 525-328.200.
Feenstra, David D.; Fey, Robert L.; and Goin, Cheryl A., to International Business Machines Corporation. Method and apparatus for in situ purging a xerographic developer. 4,523,615, Cl. 141-1.000.
Feger, William E.: *See—*
Haken, Roger A.; and Feger, William E., 4,524,431, Cl. 365-222.000.
Feist, Wolfgang M., to Raytheon Company. Semiconductor devices and manufacturing methods. 4,523,368, Cl. 29-571.000.
Ferag AG: *See—*
Reist, Walter, 4,523,775, Cl. 283-36.000.
Ferranti Limited: *See—*
Rogers, Douglas J., 4,524,347, Cl. 340-347.00P.
Ferretti, August, to Du Pont de Nemours, E. I., and Company. Process for spheroidal BaFCl:Eu phosphor particles. 4,524,016, Cl. 252-301.40H.
Fester, Walter; and Huber, Bernd, to Hoechst Aktiengesellschaft. Processes for preparing thermostable fibers and filaments. 4,524,041, Cl. 264-182.000.
Fetzer, Jurgen: *See—*
Braun, Karl; and Fetzer, Jurgen, 4,523,695, Cl. 227-8.000.
Feuerhahn, Martin P. O., to Shell Oil Company. Process for preparing aqueous binder compositions. 4,524,161, Cl. 523-414.000.
Fey, Robert L.: *See—*
Feenstra, David D.; Fey, Robert L.; and Goin, Cheryl A., 4,523,615, Cl. 141-1.000.
Finch, Timothy D.; and Beavan, Stuart W., to Lever Brothers Company. Photobleach system, composition and process. 4,524,014, Cl. 252-188.100.
Finn, Lyle D.; Volkert, Bruce C.; Matthews, Jamie F., Jr.; and Brady, Michael M., to Exxon Production Research Co. J-tube method and apparatus. 4,523,877, Cl. 405-195.000.
Finucane, Raymond G.; and Jahns, Hans O., to Exxon Production Research Co. Ice barrier construction. 4,523,879, Cl. 405-217.000.
Finucane, Thomas P.: *See—*
Bardsley, Robert F.; Finucane, Thomas P.; Hebel, Carl; Schoonmaker, Charles D.; Wruk, Philip J.; and Lee, Edward P., deceased, 4,524,078, Cl. 426-112.000.
Fiori, Lee B.: *See—*
Doyle, Richard H.; and Fiori, Lee B., 4,523,646, Cl. 173-15.000.
Firestone Tire & Rubber Company, The: *See—*
Graves, Daniel F., 4,524,052, Cl. 423-277.000.
Hergenrother, William L., 4,524,040, Cl. 264-136.000.
Firmenich, SA: *See—*
Giersch, Wolfgang K.; and Ohloff, Gunther, 4,524,019, Cl. 252-522.00R.
Fischbeck, Kenneth H.: *See—*
Bain, Lee L.; and Fischbeck, Kenneth H., 4,524,364, Cl. 346-1.100.
Fischer, Hermann, to M.A.N.-Roland Druckmaschinen Aktiengesellschaft. Rotary printing machine with web tear clearing system. 4,523,522, Cl. 101-219.000.
Fischer, Roland: *See—*
Tietze, Lutz-Friedjan; and Fischer, Roland, 4,524,202, Cl. 536-18.500.
Fish, Russell, III; and Yurchenco, James R., to Post Technologies, Inc. Low-cost electronic mail terminal. 4,524,242, Cl. 178-4.000.
Fitzgerald, William C.: *See—*
Allen, Edwin M.; Foust, Eugene C.; Sievert, Steven A.; Fitzgerald, William C.; and Moffitt, Max L., 4,523,842, Cl. 356-124.000.
Flasck, James D., to Energy Conversion Devices, Inc. Decorative carbon coating and method. 4,524,106, Cl. 428-408.000.
Fluid Devices Limited: *See—*
Larner, Donald A., 4,523,476, Cl. 73-744.000.
FMC Corporation: *See—*
Moore, Donald E.; and Olsen, David W., 4,523,686, Cl. 212-152.000.
Titsworth, Raymond; and Lill, Melvin H., 4,523,844, Cl. 356-152.000.
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Focke, Heinz; and Bretthauer, Hans J., 4,523,919, Cl. 493-212.000.
Focke, Heinz; and Bretthauer, Hans J., to Focke & Co. Process and apparatus for attaching small tear-open strips to packaging material or the like. 4,523,919, Cl. 493-212.000.
Foley, Michael S.: *See—*
Petric, Paul F.; and Foley, Michael S., 4,524,261, Cl. 219-121.0EL.
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Drisaldi, Giovanni; Fontana, Eugenio; Manetti, Virgilio; Segu , Franco; Segu , Sandro; and Segu , Bruno, 4,523,908, Cl. 433-8.000.
Ford Aerospace & Communications Corporation: *See—*
Frazer, Alson C., 4,523,728, Cl. 244-3.290.
Forslund, Lennart; and Nilsson, Orjan, to Svenska Rotor Maskiner Aktiebolag. Ejector pump with ringshaped nozzle. 4,523,894, Cl. 417-161.000.
Fory, Werner; Gass, Karl; Meyer, Willy; and Schurter, Rolf, to Ciba-Geigy Corporation. N-Phenylsulfonyl-N'-pyrimidinylureas. 4,523,944, Cl. 71-92.000.
Foss, Warren M.: *See—*
Pall, David B.; Degen, Peter J.; Joffee, Irving B.; Foss, Warren M.; and Gsell, Thomas C., 4,523,995, Cl. 210-504.000.
Foster, Richard L., to C & I Joint Venture. Water skiing tow system. 4,523,525, Cl. 104-173.0ST.
Foster, Stephen R.; and Austin, Peter W., to Baker CAC, Inc. Actuator having Belleville washer configuration operating in concert with a piston cylinder member. 4,523,516, Cl. 92-130.00B.
Foster Wheeler Energy Corporation: *See—*
Banquy, David, 4,524,056, Cl. 423-359.000.
Fouss, James L.; Parker, John J.; Child, James L., Jr.; and Sting, Donald W., to Hancor, Inc. Multi-layered corrugated conduit with "black-eye" like apertures. 4,523,613, Cl. 138-121.000.
Foust, Eugene C.: *See—*
Allen, Edwin M.; Foust, Eugene C.; Sievert, Steven A.; Fitzgerald, William C.; and Moffitt, Max L., 4,523,842, Cl. 356-124.000.
Fowler, James M., Jr.: *See—*
Fathauer, George H.; Fowler, James M., Jr.; Rylicki, Edward J.; and Mason, Edwin E., 4,523,463, Cl. 73-204.000.
Fowles, Patrick E.; and Yan, Tsoung-Yuan, to Mobil Oil Corporation. Coproduction of durene and gasoline from synthesis gas and alcohols

and separation of durene-gasoline mixtures. 4,524,227, Cl. 585-408.000.
Fowles, Patrick E.; and Yan, Tsoung-Yuan, to Mobil Oil Corporation. Production of durene and gasoline from synthesis gas. 4,524,228, Cl. 585-408.000.
Fowles, Patrick E.; and Yan, Tsoung-Yuan, to Mobil Oil Corporation. Production of durene from alcohols and ethers. 4,524,231, Cl. 585-469.000.
Fox, Duke. Model airplane engine. 4,523,557, Cl. 123-197.0AB.
Fox, Paul W. External coat pocket for luggage. 4,523,678, Cl. 206-287.100.
Foxboro Company, The: *See*—
Miller, Richard W., 4,523,477, Cl. 73-861.020.
Fraige, Richard. Buoyant fiber product used in improved waterbed float with hanging baffle. 4,523,343, Cl. 5-450.000.
Framatome & Cie.: *See*—
Colling, Jean M., 4,524,449, Cl. 377-28.000.
Francois, Daniel: *See*—
Clement, Gilles; Francois, Daniel; Marchal, Paul; and Moreau, Claude, 4,523,884, Cl. 414-8.000.
Franke, Earnest A., to General Electric Company. Wide range reflective phase shifter/modulator. 4,524,336, Cl. 332-16.00R.
Frazer, Alson C., to Ford Aerospace & Communications Corporation. Passive auto-erecting alignment wings for long rod penetrator. 4,523,728, Cl. 244-3.290.
Frazier Precision Instrument Company, Inc.: *See*—
Scrivener, Thomas F.; and Schoonover, Randall M., 4,523,653, Cl. 177-147.000.
Freeman, D. Bruce; Kesse, Bernard G.; and Thiel, Philip P., to Louis G. Freeman Company, The. Apparatus for applying thermoplastic adhesive to flexible die-cut parts. 4,523,541, Cl. 118-202.000.
Freerks, Conrad T., to Minnesota Mining and Manufacturing Company. Wet surface treating device and element therefor. 4,523,411, Cl. 51-170.0MT.
Frey, Max, to Roper Industries, Inc. Impeller pump with self-priming column attachment. 4,523,900, Cl. 417-365.000.
Frey, Otto, to Sulzer Brothers Limited. Retention device for centering an endoprosthesis shank in a bone. 4,523,587, Cl. 128-92.00C.
Frick, Heinz E., to British Aerospace Public Limited Company. Retrieving and/or launching system. 4,523,729, Cl. 244-115.000.
Friedmann, Oswald: *See*—
Maucher, Paul; and Friedmann, Oswald, 4,523,558, Cl. 123-198.00F.
Fritz, Conrad M., to Keystone Engineering Company. High-performance low-torque anti-friction bearing assembly. 4,523,793, Cl. 384-604.000.
Frutschi, Hans-Ulrich, to BBC Brown, Boveri & Company, Limited. Air storage power station. 4,523,432, Cl. 60-659.000.
Fuchs, Francis J., Jr. Methods of and apparatus for controlling the gap between a mandrel and die during extrusion. 4,523,444, Cl. 72-21.000.
Fuchs, Uwe, to Linde Aktiengesellschaft. Process for the compressive regeneration of flexible, porous materials. 4,524,139, Cl. 502-22.000.
Fuhrer, Jack S.: *See*—
Willis, Donald H.; and Fuhrer, Jack S., 4,524,447, Cl. 375-26.000.
Fuji Electric Co., Ltd.: *See*—
Kondo, Kazuo; Imamura, Seiji; Saito, Shigemasa; Akimoto, Mamoru; and Sunaga, Mitsuo, 4,523,711, Cl. 228-198.000.
Fuji Photo Film Co., Ltd.: *See*—
Aoki, Kozo; Umemoto, Makoto; and Ogawa, Akira, 4,524,132, Cl. 430-552.000.
Iwasa, Yasuo; and Ishimaru, Shingo, 4,524,130, Cl. 430-505.000.
Kishimoto, Shinzo; Ohno, Shigeru; and Tsujikawa, Teruaki, 4,524,129, Cl. 430-393.000.
Konishi, Masahiro, 4,524,381, Cl. 358-29.000.
Nishizawa, Junichi; Tamamushi, Takashige; Shimanuki, Koji; and Inuiya, Masafumi, 4,524,391, Cl. 358-213.000.
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Eguchi, Mitsuo; Tagawa, Kiyoharu; Ogawa, Hitoshi; Bandai, Mikio; and Nagashima, Nobuharu, 4,523,829, Cl. 354-406.000.
Kojima, Takuo; and Ishibashi, Kuniaki, 4,523,806, Cl. 350-96.250.
Fuji Xerox Co., Ltd.: *See*—
Inui, Toshiharu; and Moriguchi, Haruhiko, 4,524,368, Cl. 346-76.0PH.
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Kimura, Tetsuo; Fujii, Hirofumi; Yuasa, Hayami; and Yonezawa, Tatuo, 4,524,351, Cl. 340-629.000.
Fujii, Yasuhiko, to Victor Company of Japan, Limited. Method and circuit arrangement for synchronous detection. 4,524,445, Cl. 371-47.000.
Fujiki, Masao, to Tokyo Shibaura Denki Kabushiki Kaisha. Velocity control device for magnetic disc apparatus and method therefor. 4,524,398, Cl. 360-78.000.
Fujikura Kasei Co., Ltd.: *See*—
Nagase, Hiroshi, 4,524,186, Cl. 525-328.800.
Fujimura, Takashi; and Nishizawa, Masahiro, to Hitachi, Ltd. Extra-high pressure mercury discharge lamp. 4,524,306, Cl. 315-326.000.
Fujita, Shuichi: *See*—
Suganuma, Tetsuya; Kazuoka, Koji; Fujita, Shuichi; Takahashi, Yoshitaka; Ueda, Katsuhiko; and Nakamura, Hitoshi, 4,524,046, Cl. 419-8.000.
Fujitsu Limited: *See*—
Iwata, Atsushi; Kaneko, Takao; Ito, Akihiko; Saito, Tadahiro; and Fukui, Hirokazu, 4,524,333, Cl. 331-17.000.
Fukatsu, Hiroshi: *See*—
Yanagisawa, Taminori; Yamaguchi, Takaharu; and Fukatsu, Hiroshi, 4,523,670, Cl. 198-403.000.
Fukatsu, Kunio, to Tokyo Shibaura Denki Kabushiki Kaisha. Automatic bank note transaction system. 4,524,268, Cl. 235-379.000.
Fukuda, David S.: *See*—
Abbott, Bernard J.; Debono, Manuel; and Fukuda, David S., 4,524,135, Cl. 435-69.000.
Fukui, Hirokazu: *See*—
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Fukunaga, Takao, to Kabushiki Kaisha Daikin Seisakusho. Automatic controlling method of transmission. 4,523,496, Cl. 74-866.000.
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Fullenkamp, Eugene H.; and Lohrey, Cecil R., to Hill-Rom Company, Inc. Medical service column and mounting bracket. 4,523,683, Cl. 211-190.000.
Funabashi, Kiyomi; Takagi, Toshio; Kawamura, Fumio; and Kikuchi, Makoto, to Hitachi, Ltd. Method of and system for regenerating powdery ion-exchange resin. 4,524,153, Cl. 521-26.000.
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Furukawa, Kenji; and Wakabayashi, Shinji, to Diesel Kiki Co., Ltd. Heater unit for automotive vehicles, permitting easy removal and fitting of heater core from and into casing. 4,523,633, Cl. 165-76.000.
Futagawa, Toshinobu, to Advanced Technology Business Creation, Inc. Apparatus for driving tapes. 4,523,725, Cl. 242-58.000.
G. Siempelkamp GmbH & Co.: *See*—
Huydts, Eduard J. C., 4,523,521, Cl. 100-259.000.
Gabrielli, Andrea, to Lange International S.A. Inner lining for sports footwear having a rigid or semi-rigid shell structure. 4,523,392, Cl. 36-10.000.
Gaddi, Bruno, to Piaggio & C. S.p.A. Bearing body for motorcycle. 4,523,660, Cl. 180-228.000.
GAF Corporation: *See*—
Cho, James R.; and Johnson, Stephen C., 4,524,061, Cl. 424-60.000.
Hashem, Mohamed M., 4,524,002, Cl. 252-8.50C.
Gaia, Aldino J., to McGraw-Edison Company. Electric fuse. 4,524,344, Cl. 337-159.000.
Gale, Michael T.: *See*—
Covey, Robert L.; and Gale, Michael T., 4,523,850, Cl. 356-375.000.
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Ross, Bernd, deceased; Bickler, Donald B.; and Gallagher, Brian D., 4,524,237, Cl. 136-261.000.
Gang-Nail Systems, Inc.: *See*—
Palacio, Joaquin J.; and Cristobal, Carlos C., 4,523,419, Cl. 52-690.000.
GAO Gesellschaft fur Automation und Organisation mbH: *See*—
Holbein, Hans J.; and Maurer, Thomas, 4,523,777, Cl. 283-67.000.
Garner, Ronald S., Sr. Game apparatus. 4,523,762, Cl. 273-411.000.
Gartner, Georg, to U.S. Philips Corporation. Thermionic cathode and method of manufacturing same. 4,524,297, Cl. 313-346.00R.
Gartner, Karl, to Yoshida Kogyo K.K. Apparatus for controlling temperature in a unit type curtain wal' 4,523,518, Cl. 98-31.000.
Gartner, Karl, to Yoshida Kogyo K.K. Cooling and heating air jet device in building interior or exterior structure. 4,523,716, Cl. 237-56.000.
Garwood, William E.: *See*—
Chester, Arthur W.; Garwood, William E.; Lucki, Stanley J.; and Tabak, Samuel A., 4,524,232, Cl. 585-517.000.
Gass, Karl: *See*—
Fory, Werner; Gass, Karl; Meyer, Willy; and Schurter, Rolf, 4,523,944, Cl. 71-92.000.
Gateway Scientific, Inc.: *See*—
Todd, Carl D., 4,524,304, Cl. 315-156.000.
Gault, Roger T., to Ingersoll Equipment Company. Ground drive control. 4,523,489, Cl. 74-474.000.
Gay, Michael J., to Motorola, Inc. Integrated notch filter. 4,524,332, Cl. 330-294.000.
Gaynor, Joseph: *See*—
Luly, Matthew H.; Lockyer, George D., Jr.; Eibeck, Richard E.; and Gaynor, Joseph, 4,524,119, Cl. 430-108.000.
GBC Closed Circuit TV Corp.: *See*—
Lefkowitz, Stephen; Benenati, Salvatore; and Ickowski, Edward S., 4,524,384, Cl. 358-108.000.
Gehrke, Gunter: *See*—
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Geltosky, John E., to Du Pont de Nemours, E. I., and Company. Hybridoma cell lines and monoclonal antibodies to theophylline. 4,524,025, Cl. 260-112.00R.
Genba, Tsuneo; Mizobe, Akio; and Okazaki, Masaki, to Kuraray Co., Ltd. Process for producing hydraulically setting extruding materials. 4,524,042, Cl. 264-211.000.
General Electric Company: *See*—
Berlec, Ivan, 4,524,302, Cl. 313-579.000.
Brown, Herbert J.; and Stitt, Thomas D., 4,524,316, Cl. 318-809.000.
Franke, Earnest A., 4,524,336, Cl. 332-16.00R.
Haag, Donald L., 4,524,255, Cl. 200-83.00R.
Kim, Bang M., 4,523,998, Cl. 210-638.000.
Magoon, Inder K., 4,523,507, Cl. 89-7.000.
Mayer, Robert E.; Magoon, Inder K.; and West, Herbert J., 4,523,508, Cl. 89-7.000.
Thibault, William C.; and Pate, Paul E., 4,523,376, Cl. 29-623.200.

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Miller, Richard L.; and Estela, Carlos, 4,523,931, Cl. 55-80.000.
General Foods Corporation: *See*—
Bardsley, Robert F.; Finucane, Thomas P.; Hebel, Carl; Schoonmaker, Charles D.; Wruk, Philip J.; and Lee, Edward P., deceased, 4,524,078, Cl. 426-112.000.
General Hospital Corporation, The: *See*—
Elmaleh, David R.; and Livni, Eli, 4,524,059, Cl. 424-1.100.
General Motors Corporation: *See*—
Thompson, Douglas K., 4,523,890, Cl. 416-95.000.
Genicom Corporation: *See*—
Berrey, Harry R.; and Caulier, Paul W., 4,523,867, Cl. 400-124.000.
Gentex Corporation: *See*—
Scalzo, John P.; and Aileo, Jackson A., 4,523,661, Cl. 181-129.000.
George, Christopher W.; Sinha, Hari N.; Vujcich, Mary R.; and Walker, Graham S., to Commonwealth Scientific and Industrial Research Organization; and Queensland Phosphate Limited. Process for the production of dicalcium phosphate. 4,524,054, Cl. 423-308.000.
Gerber Products Company: *See*—
Spletzer, Barry; Swiatlowski, George J.; and Brandt, Maurice W., 4,523,377, Cl. 29-773.000.
Germanas, Dalia: *See*—
Qualeatti, Gail M.; Rosen, Bruce I.; Arena, Blaise J.; and Germanas, Dalia, 4,524,225, Cl. 568-885.000.
Gewerkschaft Eisenhutte Westfalia: *See*—
Hessel, Heinz; and Plester, Karl Heinz, 4,523,512, Cl. 91-168.000.
Gfeller, Karl; and Datwyler, Peter, to Sinar AG Schaffhausen. Device for a photographic camera. 4,523,824, Cl. 354-161.000.
Giacomini, Gian F., to Applied Power Inc. Method and apparatus for measuring deviations in vehicle bodies or frames. 4,523,384, Cl. 33-180.0AT.
Giebel, Burkhard, to ITT Industries, Inc. Integrated memory matrix comprising nonvolatile reprogrammable storage cells. 4,524,429, Cl. 365-154.000.
Giersch, Wolfgang K.; and Ohloff, Gunther, to Firmenich, SA. Spirolactone derivatives, their use as perfuming agents, and perfuming composition containing same. 4,524,019, Cl. 252-522.00R.
Gilardini S.p.A.: *See*—
Mariani, Lauro, 4,523,790, Cl. 301-64.0SD.
Gilding, Denis K.; and Clarke, Roy M., to University of Liverpool; and Vascor Inc. Process for the manufacture of polyurethane resin for electrostatic spinning. 4,524,036, Cl. 264-10.000.
Giovanola, Massimo, to Albe S.A. Piece-holder table revolving intermittently in machine tools. 4,523,360, Cl. 29-38.00C.
Gippa, Michelangelo, to Azypatent AG. Machine with an intermittently rotating table for the preformance of work operations. 4,523,359, Cl. 29-38.00A.
Glaser, Roger M.; Petrofsky, Jerrold S.; and DuFour, Howard R., to Wright State University. Wheelchair and drive system therefor. 4,523,769, Cl. 280-252.000.
Glasgow, D. Gerald; and Satanek, Joseph, to United States of America, Navy. Process for preparation of cross-linked poly(tri-n-butyltin)methacrylate with simultaneous particle size reduction. 4,524,190, Cl. 525-370.000.
Glaxo Group Limited: *See*—
Price, Barry J.; Clitherow, John W.; Bradshaw, John; Martin-Smith, Michael; Judd, Duncan B.; and Hayes, Roger, 4,524,071, Cl. 514-272.000.
Gleim, Robert D.; and de Grandpre, Mark P., to Rohm and Haas Company. Positive photoresists containing preformed polyglutarimide polymer. 4,524,121, Cl. 430-176.000.
Glodo, David O.; and McFaddin, James, to Core Laboratories, Inc. Signal processing apparatus. 4,524,420, Cl. 364-497.000.
Gluck, Roland: *See*—
Kizler, Wolfgang; Sieder, Wolfgang; Schopf, Hans-Joachim; Dobler, Helmut; and Gluck, Roland, 4,523,916, Cl. 464-98.000.
Gockel, Karl-Heinz; Anhauser, Dieter; Hoffmann, Hans R.; and Reinhold, Karl-Heinz, to Lohmann GmbH & Co. KG; and Sanol Schwarz GmbH. Laminate including an adhesive-coated substrate and a removable cover layer having means to form grasp parts upon bending. 4,524,095, Cl. 428-43.000.
Godfrey, Jollie D., Jr.: *See*—
Gordon, Eric M.; and Godfrey, Jollie D., Jr., 4,524,212, Cl. 548-533.000.
Goin, Cheryl A.: *See*—
Feenstra, David D.; Fey, Robert L.; and Goin, Cheryl A., 4,523,615, Cl. 141-1.000.
Goldstein, Andrew D.: *See*—
Strickler, Steven E.; Simmons, Jerry C.; Golladay, James; and Goldstein, Andrew D., 4,523,460, Cl. 73-200.000.
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Strickler, Steven E.; Simmons, Jerry C.; Golladay, James; and Goldstein, Andrew D., 4,523,460, Cl. 73-200.000.
Golombeck, Paul: *See*—
Wolff, Siegfried; and Golombeck, Paul, 4,524,169, Cl. 524-263.000.
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Cans, Yves; Gonda, Richard; and Tavernier, Marc, 4,523,627, Cl. 164-467.000.
Goodner, Willis R.: *See*—
Balda, Raymond J.; Bukhman, Yefim; and Goodner, Willis R., 4,523,372, Cl. 29-590.000.
Goodrich, Judson E.: *See*—
Graf, Peter E.; and Goodrich, Judson E., 4,523,957, Cl. 106-277.000.
Goodyear Tire & Rubber Company, The: *See*—
Hsu, Wen-Liang; Maly, Neil A.; Matrana, Barry A.; Strozier, Robert W.; and Wideman, Lawson G., 4,524,233, Cl. 585-606.000.
Gordon, Eric M.; and Godfrey, Jollie D., Jr., to E. R. Squibb & Sons, Inc. Acyloxyketone substituted imino and amino acids. 4,524,212, Cl. 548-533.000.
Gorman, Barry; and Hearn, Edwin J., to National Research Development Corporation. Polariscope. 4,523,848, Cl. 356-368.000.
Goss, Willis C.; Nelson, Mark D.; and McLauchlan, John M., to United States of America, National Aeronautics and Space Administration. Optical fiber coupling method and apparatus. 4,523,810, Cl. 350-320.000.
Gosteli, Jacques; Ernest, Ivan; and Woodward, Robert B., to Ciba-Geigy Corporation. Monocyclic intermediates for thia-aza compounds with a β-lactam ring. 4,524,028, Cl. 260-239.00A.
Goto, Tukasa: *See*—
Mukainakano, Shinichi; Hattori, Tadashi; Nishida, Minoru; Mizuno, Toru; and Goto, Tukasa, 4,523,552, Cl. 123-143.00B.
Gott Corporation: *See*—
Branscum, Tony E., 4,523,699, Cl. 222-189.000.
Gould, Charles M.; and Blake, Andy F., to Shasta Industries, Inc. Distribution valve. 4,523,606, Cl. 137-119.000.
Gouttebessis, Jacques, to Compagnie Generale Des Etablissements Michelin. Protective ply for tire crown of three-dimensional structure. 4,523,619, Cl. 152-527.000.
Gower, Irving W.; Cherry, Carl J.; and Yang, David S., to Combustion Engineering, Inc. Aluminum dross reclamation. 4,523,949, Cl. 75-24.000.
Grady, Clyde C.; and Grady, Clyde C., II, to Christianson Manufacturing Corporation. Double action umbrella. 4,523,601, Cl. 135-22.000.
Grady, Clyde C., II: *See*—
Grady, Clyde C.; and Grady, Clyde C., II, 4,523,601, Cl. 135-22.000.
Graefe, Ralph G., to Keene Engineering, Inc. Jig pan concentrator. 4,523,989, Cl. 209-44.000.
Graf, Peter E.; and Goodrich, Judson E., to Chevron Research Company. Open-graded asphalt emulsion mixes. 4,523,957, Cl. 106-277.000.
Graham, Thomas, to Reed International, PLC. Wallcovering in roll form. 4,524,097, Cl. 428-141.000.
Granger, Donald W.: *See*—
Faul, Donald; Broussard, Paul P.; and Granger, Donald W., 4,523,453, Cl. 73-40.700.
Granger, Gerald M. Boat anchor. 4,523,539, Cl. 114-299.000.
GRAPHA-Holding AG: *See*—
Merkli, Peter, 4,523,751, Cl. 270-60.000.
Graves, Daniel F., to Firestone Tire & Rubber Company, The. Borate chloride polymerization catalysts. 4,524,052, Cl. 423-277.000.
Gray, Willie C.: *See*—
Ivy, Jim S.; and Gray, Willie C., 4,523,403, Cl. 43-17.000.
Greco, Alberto; Bertolini, Guglielmo; and Zavattini, Omero, to Anic S.p.A.; and Dow Corning Corporation. Isobutylene-triene copolymers cross-linkable under ambient humidity conditions, a process for their preparation, and intermediate suitable for this purpose. 4,524,187, Cl. 525-332.100.
Greeson, James C., Jr., to International Business Machines Corporation. High frequency pilot. 4,524,352, Cl. 340-714.000.
Grego, Giorgio, to Cselt - Centro Studi E Laboratori Telecomunicazioni S.p.A. Method of and apparatus for continuously monitoring diameter variations of an optical fiber being drawn. 4,523,938, Cl. 65-2.000.
Grinberg, Jan; and Hansen, Siegfried, to Hughes Aircraft Company. Modular input-programmable logic circuits for use in a modular array processor. 4,524,428, Cl. 364-900.000.
Gripper, Inc.: *See*—
Reneau, Bobby J., 4,523,742, Cl. 254-29.00A.
Grohe, Klaus, to Hans Grohe GmbH & Co. KG. Holding device for a shower post. 4,523,734, Cl. 248-251.000.
Grosskreuz, Gerhard: *See*—
Kleinophorst Geb. Schadel, Edith; and Grosskreuz, Gerhard, 4,523,616, Cl. 141-83.000.
Grossman, Walter B.: *See*—
Kostanty, Raymond G.; Sciabbarrasi, Michael; and Grossman, Walter B., 4,524,461, Cl. 455-79.000.
Groves, Christopher K.; Duncan, Kevin; and Darwall, Edward C. D., to Mitel Corporation. Integrated circuit planarizing process. 4,523,975, Cl. 156-643.000.
Gruber, Peter: *See*—
Muggli, Jurg; and Gruber, Peter, 4,524,281, Cl. 250-574.000.
Grumman Aerospace Corporation: *See*—
Arena, Aldo; and Benoit, Robert L., 4,523,872, Cl. 403-274.000.
Grunbeck Wasseraufbereitung GmbH: *See*—
Arens, Hans, 4,523,903, Cl. 417-489.000.
Grunvogel, Karl: *See*—
Biber, Klaus; Grunvogel, Karl; Lemcke, Ulrich; Jakubowski, Heinz; and Schulz, Kurt, 4,523,732, Cl. 248-123.100.
Gsell, Thomas C.: *See*—
Pall, David B.; Degen, Peter J.; Joffee, Irving B.; Foss, Warren M.; and Gsell, Thomas C., 4,523,995, Cl. 210-304.000.
GTE Automatic Electric Inc.: *See*—
Simmons, Nathaniel; Puccini, Sergio E.; Magnusson, Stig E.; and Parikh, Kamal I., 4,524,441, Cl. 370-63.000.
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GTE Laboratories Incorporated: *See—*
Melman, Paul; and Carlsen, W. John, 4,523,843, Cl. 356-127.000.
GTE Products Corporation: *See—*
Cohen, Sheppard; Barakitis, Nikolaos; Loughridge, Frederick A.; and Marlor, Richard C., 4,524,301, Cl. 313-493.000.
Jenkins, Robert G.; and Shinn, Dennis B., 4,523,939, Cl. 65-32.000.
Johnson, Stephen G.; and Labadini, William M., 4,523,795, Cl. 315-97.000.
Gudat, Wolfgang; Klatt, Alfred; and Sebesta, Gunter, to WABCO Westinghouse Fahrzeugbremsen GmbH. Pneumatic door-operating arrangement. 4,523,513, Cl. 91-427.000.
Guendling, Fred W., Jr. Golf club putter. 4,523,758, Cl. 273-77.00R.
Gugel, Georg: *See—*
Muller, Thomas; Lehner, Gunter; and Gugel, Georg, 4,523,470, Cl. 73-623.000.
Gulf Oil Corporation: *See—*
Bakshi, Kiran R.; Barie, Walter P.; and Sabourin, Edward T., 4,524,171, Cl. 524-376.000.
Gunduz, Dincer H.: *See—*
Gunduz, Nurten N.; and Gunduz, Dincer H., 4,523,826, Cl. 354-337.000.
Gunduz, Nurten N.; and Gunduz, Dincer H., to University of Pittsburgh. Autoradiography apparatus including a slide rack. 4,523,826, Cl. 354-337.000.
Gusmer Corporation: *See—*
Commette, Denis S.; and LaMonica, Eugene R., 4,523,696, Cl. 222-135.000.
Gutman, Edward J.: *See—*
Budny, Thomas J.; Hollenbaugh, William H., Jr.; and Gutman, Edward J., 4,524,120, Cl. 430-137.000.
Gygax, Claude-Andre , to Societe Suisse pour l'Industrie Horlogere Management Services. Electronic timepiece including an electro-acoustic transducer. 4,523,856, Cl. 368-72.000.
H. H. Robertson (U.K.) Limited: *See—*
Payne, Harold J. W.; and Payne, Ghislaine R. L., 4,523,416, Cl. 52-221.000.
H. Krantz GmbH & Co.: *See—*
Weck, Franz, 4,523,609, Cl. 137-499.000.
H. Weidmann, AG: *See—*
Isler, Erwin, 4,523,880, Cl. 405-259.000.
Ha, Eric P. L.: *See—*
Faggin, Federico; Klein, Jerry A.; Yazolino, Lauren F.; Korody, Robert G.; Ha, Eric P. L.; and Kerman, Stephen, 4,524,244, Cl. 179-2.0DP.
Haag, Donald L., to General Electric Company. Control device and method of operating such. 4,524,255, Cl. 200-83.00R.
Hadtke, Frederick B.: *See—*
Paikoff, Myron; Hain, Robert W.; and Hadtke, Frederick B., 4,523,679, Cl. 206-370.000.
Haensel, Vladimir, to UOP Inc. Preparation of alkylaromatic compounds. 4,524,230, Cl. 585-467.000.
Haffer, Gregor: *See—*
Sauer, Gerhard; and Haffer, Gregor, 4,524,208, Cl. 546-69.000.
Hagedorn-Olsen, Jens, to Oce-Helioprint AS. Device for bringing sheets into flat position. 4,523,840, Cl. 355-91.000.
Hagerdal, Barbel G. R.; and Mosbach, Klaus H. Preparation of catalysts for biochemical conversion reactions. 4,524,137, Cl. 435-178.000.
Hagio, Shigeru; and Kawachi, Youji, to Sanyo Chemical Industries, Ltd. Adhesive composition and laminates therefrom. 4,524,104, Cl. 428-341.000.
Hagiwara, Michiaki: *See—*
Masumoto, Tsuyoshi; Inoue, Akihisa; and Hagiwara, Michiaki, 4,523,626, Cl. 164-463.000.
Hagiwara, Toshio: *See—*
Takahashi, Masahiro; Hagiwara, Toshio; Nishizaki, Takao; and Niizeki, Kinya, 4,523,433, Cl. 62-60.000.
Hagyuda, Nobuyoshi: *See—*
Iida, Yoshikazu; Hagyuda, Nobuyoshi; and Hasegawa, Hiroshi, 4,523,830, Cl. 354-416.000.
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Paikoff, Myron; Hain, Robert W.; and Hadtke, Frederick B., 4,523,679, Cl. 206-370.000.
Haken, Roger A.; and Feger, William E., to Texas Instruments Incorporated. High-speed nonvolatile memory array. 4,524,431, Cl. 365-222.000.
Halcon SD Group, Inc., The: *See—*
Barber, James J., 4,523,980, Cl. 204-59.00R.
Haley, Norman S. Automatic batten setter. 4,523,706, Cl. 227-7.000.
Hall, Karen: *See—*
Berczi, Charles N.; and Hall, Karen, 4,524,170, Cl. 524-371.000.
Hall, Robert L.; and Wood, Lowell T., to Schlumberger Technology Corporation. Pressure wave fiber optic transducer cable. 4,524,436, Cl. 367-169.000.
Halliburton Company: *See—*
Borchardt, John K., 4,524,003, Cl. 252-8.55R.
Moore, Robert A.; and Karisch, Edward P., 4,524,325, Cl. 324-375.000.
Hammond, Thomas J.; and Lama, William L., to Xerox Corporation. Flash lamp power supply with reduced capacitance requirements. 4,524,289, Cl. 307-110.000.
Hamprecht, Gerhard; Varwig, Juergen; and Wuerzer, Bruno, to BASF Aktiengesellschaft. 4H-3,1-Benzoxazine derivatives, compositions and herbicidal use. 4,523,942, Cl. 71-88.000.
Hamprecht, Gerhard: *See—*
Parg, Adolf; Wuerzer, Bruno; and Hamprecht, Gerhard, 4,523,946, Cl. 71-092.000.
Hamprecht, Rainer: *See—*
Bergthaller, Peter; Stolzenburg, Rudolf; Marx, Paul; and Hamprecht, Rainer, 4,524,124, Cl. 430-241.000.
Hancor, Inc.: *See—*
Fouss, James L.; Parker, John J.; Child, James L., Jr.; and Sting, Donald W., 4,523,613, Cl. 138-121.000.
Hanna, Marie R.: *See—*
Sprecker, Mark A.; Belko, Robert P.; Van Loveren, Augustinus G.; and Hanna, Marie R., 4,524,020, Cl. 252-522.00R.
Hans Grohe GmbH & Co. KG: *See—*
Grohe, Klaus, 4,523,734, Cl. 248-251.000.
Hansen, Siegfried: *See—*
Grinberg, Jan; and Hansen, Siegfried, 4,524,428, Cl. 364-900.000.
Hantke, Klaus: *See—*
Brajder, Antonio; and Hantke, Klaus, 4,524,334, Cl. 331-135.000.
Haque, Reza; and Smith, Edward F., III, to Olin Corporation. Three-step plasma treatment of copper foils to enhance their laminate adhesion. 4,524,089, Cl. 427-38.000.
Harada, Nozomu; Ito, Hiroshi; and Adachi, Toshikazu, to Tokyo Shibaura Denki Kabushiki Kaisha. Apparatus for glow discharge deposition of a thin film. 4,523,544, Cl. 118-702.000.
Harada, Shoji: *See—*
Shimizu, Tadao; Shimizu, Noriyuki; and Harada, Shoji, 4,524,098, Cl. 428-156.000.
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Haraguchi, Kouichi: *See—*
Hayashi, Yoshiaki; Haraguchi, Kouichi; and Koshidaka, Yukio, 4,524,045, Cl. 264-521.000.
Harley-Davidson Motor Co., Inc.: *See—*
Mezger, Hans; and Konneker, Reinhard, 4,523,555, Cl. 123-193.00C.
Harnischfeger Corporation: *See—*
Reiff, Donald P., 4,523,887, Cl. 414-664.000.
Harper, David C.: *See—*
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Harrelson, Gary A.: *See—*
Brooks, Harvey L., 4,524,320, Cl. 324-66.000.
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Meza, Peter J., 4,524,246, Cl. 179-18.0FA.
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Harvey, Ian J.: *See—*
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Laws, Harold H.; Caruso, Bart P.; and Hascall, James G., 4,523,364, Cl. 29-33.00S.
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Iida, Yoshikazu; Hagyuda, Nobuyoshi; and Hasegawa, Hiroshi, 4,523,830, Cl. 354-416.000.
Hashem, Mohamed M., to GAF Corporation. Foaming agent. 4,524,002, Cl. 252-8.50C.
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Yokoo, Makoto; Nakatomi, Yoshitsugu; and Hashimoto, Shinichi, 4,523,831, Cl. 355-3.00R.
Hashiyama, Hideshi: *See—*
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Das, Jagabandhu; and Haslanger, Martin F., 4,524,151, Cl. 514-469.000.
Hassler, Andreas. Holder and method of firing ceramic briquettes. 4,523,907, Cl. 432-258.000.
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Scheibel, Horst; and Haug, Walter, 4,523,398, Cl. 37-220.000.
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Maheras, George; and Hayworth, Hubert O., 4,523,851, Cl. 356-399.000.

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Rehfuss, John W.; Hazelwood, Louis S.; and Price, Martin B., 4,524,173, Cl. 524-512.000.

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Heard, Charles M. Fan-shaped indirect lighting reflector. 4,524,405, Cl. 362-18.000.

Hearn, Edwin J.: *See—*
Gorman, Barry; and Hearn, Edwin J., 4,523,848, Cl. 356-368.000.

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Bardsley, Robert F.; Finucane, Thomas P.; Hebel, Carl; Schoonmaker, Charles D.; Wruk, Philip J.; and Lee, Edward P., deceased, 4,524,078, Cl. 426-112.000.

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Thevis, Paul; Danner, Helmut; and Weisser, Erich, 4,523,509, Cl. 89-129.020.

Hedrick, Harold M., II, to Apache Equipment, Inc. Apparatus and method for producing virgin and/or reclaiming used abrasives. 4,523,988, Cl. 209-11.000.

Heeres, Jan; Backx, Leo J. J.; and Mostmans, Joseph H., to Janssen Pharmaceutica N.V. Antimicrobial imidazole derivatives. 4,524,110, Cl. 428-537.100.

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Heidemann, Gerhard, to Norton Christensen, Inc. High pressure sealing means for longitudinally movable parts of deep-well drilling tools. 4,523,765, Cl. 277-165.000.

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Schenk, Gunther; Bergthaller, Peter; Heidenreich, Holger; and Wolfrum, Gerhard, 4,524,123, Cl. 430-241.000.

Heilmann, Steven M.; Krepski, Larry R.; and Rasmussen, Jerald K., to Minnesota Mining and Manufacturing Company. Process for the production of acyloins. 4,524,221, Cl. 568-322.000.

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Helbig, Klaus; and Pusch, Guenther, to Deutsche Texaco Aktiengesellschaft. Method for determining the degree of change of material properties of underground strata. 4,524,435, Cl. 367-41.000.

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Hemphill, Dean P., to Shell Oil Company. Ice slot maintenance. 4,523,876, Cl. 405-158.000.

Hengesbach, Robert W. Drill press with overhead mount. 4,523,882, Cl. 408-236.000.

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Reuter, Herbert; Seiter, Wolfgang; and Wegener, Ingo, 4,524,010, Cl. 252-135.000.

Henry, Paul M.: *See—*
Burnham, Stephen R.; and Henry, Paul M., 4,524,318, Cl. 323-313.000.

Hensenne, Joseph: *See—*
Defosse, Georges; and Hensenne, Joseph, 4,523,573, Cl. 124-41.00R.

Heraeus Quarzschmelze GmbH: *See—*
Bayne, Christopher J.; Lambert, Joseph L.; and Collyer, Graham E., 4,523,885, Cl. 414-156.000.

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Cartwright, Richard V., 4,523,967, Cl. 149-2.000.

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Schippers, Heinz; Hertell, Siegfried; and Eich, Otwin, 4,523,901, Cl. 417-395.000.

Herter, Karl: *See—*
Braetsch, Hartmut; and Herter, Karl, 4,523,911, Cl. 433-101.000.

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Herzog, Klaus: *See—*
Werner, Walter; Herzog, Klaus; and Szenger, Franz, 4,523,382, Cl. 33-169.00R.

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Charles, Robert G.; and Hickam, William M., 4,523,996, Cl. 210-504.000.

Hickory Springs Manufacturing Company: *See—*
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Higashiguchi, Teruaki: *See—*
Nakatani, Kaname; Miyakawa, Nobuhiro; Higashiguchi, Teruaki; and Edo, Tomomi, 4,524,118, Cl. 430-56.000.

Higashine, Seiji: *See—*
Sugisawa, Ko; Yamamoto, Masanori; Shibuki, Masaru; Nomura, Yukihiro; Sengoku, Kouji; and Higashine, Seiji, 4,524,080, Cl. 426-236.000.

Higuchi, Toshiharu: *See—*
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Fullenkamp, Eugene H.; and Lohrey, Cecil R., 4,523,683, Cl. 211-190.000.

Hillman, Melville E. D.; Huffman, William J.; Lipinsky, Edward S.; and Stambaugh, Edgel, to Battelle Development Corporation. Gasohol production from thermochemical conversion of biomass to ethanol. 4,523,928, Cl. 44-56.000.

Hilton, Charles B.: *See—*
Davenport, Kenneth G.; and Hilton, Charles B., 4,524,217, Cl. 564-223.000.

Himmelmann, Wolfgang; Sackmann, Gunter; and Meyer, Rudolf, to Agfa-Gevaert Aktiengesellschaft. Photographic silver halide recording material with graft copolymer particles in outer layer. 4,524,131, Cl. 430-523.000.

Hinderer, Robert F., to Federal-Mogul Corporation. Halogen-containing elastomer composition, and vulcanizing process using dimercaptothiodiazole and dithiocarbamate curing system. 4,524,185, Cl. 525-328.200.

Hiromori, Kunio; and Tsuda, Kiyoshi, to Nippon Electric Co., Ltd. Apparatus for feeding flat articles. 4,523,753, Cl. 271-31.100.

Hirose, Masayoshi: *See—*
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Hirzinger, Peter; and Vatterott, Karl-Heinz, to Triumph-Adler A.G. fur Buro- und Informationstechnik. Wire print head having piezoelectric drive elements. 4,523,866, Cl. 400-124.000.

Hisajima, Masahiko; Kimura, Hiroshi; Shigemura, Yutaka; Yada, Isao; Irie, Yoichiro; Morimoto, Kiyoshi; and Nagashima, Takashi, to Mita Industrial Co., Ltd. Paper guiding device in a copying apparatus. 4,523,754, Cl. 271-264.000.

Hisatake, Michio; Yamamoto, Kazuji; Hyodo, Toru; and Takahashi, Yoshitaka. Safety control device of commutator motors. 4,524,309, Cl. 318-434.000.

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Fujimura, Takashi; and Nishizawa, Masahiro, 4,524,306, Cl. 315-326.000.
Funabashi, Kiyomi; Takagi, Toshio; Kawamura, Fumio; and Kikuchi, Makoto, 4,524,153, Cl. 521-26.000.
Kosuge, Tokuo, 4,523,561, Cl. 123-339.000.
Kuge, Toshio; Yokoyama, Hiroshi; Nogita, Shunsuke; Nakamura, Yoichi; and Muroi, Katsumi, 4,523,927, Cl. 44-1.00B.
Nagase, Hiroshi; and Okuyama, Toshiaki, 4,524,310, Cl. 318-808.000.
Sato, Masaaki; Kaneda, Aizo; and Watanabe, Makio, 4,524,369, Cl. 346-135.100.
Shibata, Akira; Komatsu, Keiichi; Kuroyanagi, Tomomitsu; and Kojima, Noboru, 4,524,380, Cl. 358-316.000.
Shimura, Yoshimasa; Kakiuchi, Hideyuki; Minamikawa, Yoshihisa; and Kawasaki, Katsuhiro, 4,524,277, Cl. 250-397.000.
Uematsu, Takao; Honma, Yoshiharu; Tanno, Seikichi; Ito, Ran; Matsubayashi, Jun; and Yoshida, Tomio, 4,523,668, Cl. 192-107.00M.
Yamada, Takahiro, 4,524,366, Cl. 346-75.000.

Hiza, Misao: *See—*
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Hoarty, John T.: *See—*
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Hoechst Aktiengesellschaft: *See—*
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Millauer, Hans; Siegemund, Gunter; and Schwertfeger, Werner, 4,524,031, Cl. 260-456.00F.
Ong, Sienling; Karsunky, Ulrich; and Schmidt, Helmut, 4,523,922, Cl. 8-471.000.
Walch, Axel; Seifried, Walter; Michel, Wolfgang; Kuhls, Jurgen; and Wildhardt, Juergen, 4,524,155, Cl. 521-64.000.

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Davis, Larry; and Klein, Joseph T., 4,524,209, Cl. 546-148.000.
Ong, Helen H.; Anderson, Vernon B.; and Profitt, James A., 4,524,207, Cl. 546-17.000.
Strupczewski, Joseph T., 4,524,074, Cl. 514-321.000.

Hoeks, Gerardus P. F.: *See—*
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Hofbauer, August: *See—*
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Hoffmann, Hans R.: *See—*
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Hofmann, Gunter A., to Maxwell Laboratories, Inc. Deactivation of microorganisms by an oscillating magnetic field. 4,524,079, Cl. 426-234.000.
Hofmann, Karl, to Robert Bosch GmbH. Fuel injection nozzle for internal combustion engines. 4,523,719, Cl. 239-533.120.
Hofmann, Richard E.; and Hofmann, Robert G., Jr., to North Side Packing Company. Meat processing equipment. 4,523,520, Cl. 99-352.000.
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Hogg, Walter R.: *See—*
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Hol, Willem A.: *See—*
Bergman, Jan; Van Genderen, Pieter; and Hol, Willem A., 4,524,358, Cl. 343-7.700.
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Holbein, Hans J.; and Maurer, Thomas, to GAO Gesellschaft fur Automation und Organisation mbH. Identification card and a method of producing same. 4,523,777, Cl. 283-67.000.
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Bergman, Jan; Van Genderen, Pieter; and Hol, Willem A., 4,524,358, Cl. 343-7.700.
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Teulings, Wilhelmus A., 4,524,361, Cl. 343-17.2PC.
Holleis, Gunter; and Wiesinger, Horst, to Voest-Alpine Aktiengesellschaft. Plate mould for continuous casting. 4,523,623, Cl. 164-436.000.
Hollenbaugh, William H., Jr.: *See—*
Budny, Thomas J.; Hollenbaugh, William H., Jr.; and Gutman, Edward J., 4,524,120, Cl. 430-137.000.
Hollimon, Marshall H. Electronic tuning aid. 4,523,506, Cl. 84-454.000.
Hollmann, Martin; and Waclawik, Francis J., to Westinghouse Electric Corp.; and United States of America, Navy. Torpedo launcher. 4,523,538, Cl. 114-238.000.
Holmes, David S.: *See—*
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Holometrics, Inc.: *See—*
Scrivener, Thomas F.; and Schoonover, Randall M., 4,523,653, Cl. 177-147.000.
Holsztynski, Wlodzimierz; and Wilson, Stephen S., to Environmental Research Inst. of Michigan. Pipeline processor. 4,524,455, Cl. 382-41.000.
Holtz, Gilbert J. Luggage cart. 4,523,773, Cl. 280-654.000.
Honda Giken Kogyo Kabushiki Kaisha: *See—*
Matsuura, Masaaki, 4,523,550, Cl. 123-90.160.
Nakamura, Yukinobu; Tagami, Katsutoshi; and Takahashi, Tsuneo, 4,524,357, Cl. 340-995.000.
Yamamoto, Kazuhiro; and Isono, Tokio, 4,523,659, Cl. 180-227.000.
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Honeywell Inc.: *See—*
Orrico, Mario M. V., 4,523,610, Cl. 137-512.150.
Wentworth, Milo R., 4,523,737, Cl. 251-4.000.
Honeywell Information Systems Inc.: *See—*
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Honma, Yoshiharu: *See—*
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Hoover, Donald R. Universal ring traveler. 4,523,424, Cl. 57-125.000.
Horgan, William J., Jr., to Blumcraft of Pittsburgh. Glass door assembly with transom bar. 4,523,414, Cl. 52-204.000.
Horiya, Keiichi; and Miyazaki, Naoki, to Tokyo Electric Co., Ltd. Thermal printer. 4,524,367, Cl. 346-76.0PH.
Hornschu, Joachim: *See—*
Lang, Walter H.; and Hornschu, Joachim, 4,523,818, Cl. 350-579.000.
Horodysky, Andrew G., to Mobil Oil Corporation. Borated N-hydrocarbyl-hydrocarbylene diamines as multifunctional lubricant/fuel additives and compositions thereof. 4,524,004, Cl. 252-32.70E.
Horodysky, Andrew G., to Mobil Oil Corporation. Borated dihydrocarbylenetriamine amides and lubricant and fuel compositions containing same. 4,524,005, Cl. 252-49.600.
Hostettler, Fritz. Microcellular polyurethane foams having integral skin. 4,524,102, Cl. 428-318.800.
House, David W., to UOP Inc. Resolution of alcohols using amino acids. 4,524,223, Cl. 568-715.000.
House Food Industrial Company Limited: *See—*
Sugisawa, Ko; Yamamoto, Masanori; Shibuki, Masaru; Nomura, Yukihiro; Sengoku, Kouji; and Higashine, Seiji, 4,524,080, Cl. 426-236.000.
Howard, Roland M., Jr., to Koomey Blowout Preventers, Inc. Ram type blowout preventers. 4,523,639, Cl. 166-55.000.
Howarth, Ian M.: *See—*
Bradley, Geoffrey; Hoarty, John T.; and Howarth, Ian M., 4,524,163, Cl. 524-5.000.
Hristov, Hristomir D.: *See—*
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Baranyi, Giuseppa; Kazmaier, Peter M.; Hsiao, Cheng-Kuo; and Burt, Richard A., 4,524,218, Cl. 564-307.000.
Hsu, Chao-Yang; Lyons, James E.; and Ellis, Paul E., Jr., to Sun Tech, Inc. Platinum (O) complex-based hydroformylation catalyst. 4,524,142, Cl. 502-153.000.
Hsu, Wen-Liang; Maly, Neil A.; Matrana, Barry A.; Strozier, Robert W.; and Wideman, Lawson G., to Goodyear Tire & Rubber Company, The. Process for the production of dienes from aldehydes. 4,524,233, Cl. 585-606.000.
Huang, Jen-chi, to Polychrome Corporation. Chemical etching of lithographic aluminum substrate. 4,524,125, Cl. 430-302.000.
Hubbard, Vance M.; and Brunson, Welton K., to Tecnol, Inc. Small ice packs and method of manufacturing the same. 4,523,353, Cl. 24-30.50R.
Huber, Bernd: *See—*
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Hubler, Lawrence C., to Xerox Corporation. Copier/duplicator with finishing apparatus having low staple control features. 4,523,750, Cl. 270-53.000.
Hubner, Bernard G., to Dresser Industries, Inc. Method and apparatus for gamma ray well logging. 4,524,273, Cl. 250-269.000.
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Huffman, William J.: *See—*
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Grinberg, Jan; and Hansen, Siegfried, 4,524,428, Cl. 364-900.000.
Hughes, Richard E., to Badger Company, Inc., The. Processes of recovering fatty acids and sterols from tall oil pitch. 4,524,024, Cl. 260-97.600.
Hughes Tool Company: *See—*
Manderscheid, Phillip H., 4,523,641, Cl. 166-208.000.
Hullihen, John. Non-refillable pourer. 4,523,687, Cl. 215-25.000.
Hullwegen, Josef, to Nixdorf Computer AG. Variable delay unit for data synchronizer using phase-sensitive counter to vary the delay. 4,524,448, Cl. 375-118.000.
Humberstone, Victor C., to Comtech Research Unit Limited. Electrophotographic contact printing and master therefore. 4,524,116, Cl. 430-31.000.
Humes, Dennis W.: *See—*
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Hunold, Klaus: *See—*
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Hunter, Warwick A.: *See—*
Robinson, Allan F.; and Hunter, Warwick A., 4,523,385, Cl. 33-296.000.
Huscher, Georg. Method and apparatus for rating hits on targets. 4,523,761, Cl. 273-371.000.
Husqvarna Aktiebolag: *See—*
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Hutto, Joe D., to Masco Corporation of Indiana. Diverter valve. 4,523,604, Cl. 137-102.000.
Huydts, Eduard J. C., to G. Siempelkamp GmbH & Co. Spindle press. 4,523,521, Cl. 100-259.000.
Hwang, Yu-Tang: *See—*
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Hyatt, David R., to Nel-Tech Development, Inc. Security system having detector sensing and identification. 4,524,349, Cl. 340-500.000.
Hybrid Energy Systems, Inc.: *See—*
Briley, Patrick B., 4,523,437, Cl. 62-238.400.
Hyder, Richard J.: *See—*
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Hyodo, Toru: *See—*
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IBP Pietzsch GmbH: *See—*
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Ickowski, Edward S.: *See—*
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Igarashi, Lawrence Y. Golf club. 4,523,759, Cl. 273-169.000.
Igura, Kenkichi, to Ichikoh Industries, Ltd. Device for adjusting the inclination of the light axis of a headlamp for motor vehicles. 4,524,407, Cl. 362-66.000.
Ih, Charles S.: *See—*
Scott, William R.; and Ih, Charles S., 4,523,469, Cl. 73-603.000.

Iida, Yoshikazu; Hagyuda, Nobuyoshi; and Hasegawa, Hiroshi, to Nippon Kogaku K.K. Automatic control type electronic flash apparatus. 4,523,830, Cl. 354-416.000.
Ikeda, Yasunari: *See—*
Okada, Takashi; Ikeda, Yasunari; and Tanaka, Yutaka, 4,524,379, Cl. 358-11.000.
Ikenoue, Tsuneo; Liu, Shin-yng; Arai, Naoki; and Umemoto, Shuichi, to Ikenoue, Tsuneo; Tohoku Ricoh Co. Ltd.; Stanley Electric Co., Ltd.; and Micron Kiki Co., Ltd. AC rectifier having semi-conductor active rectifying element. 4,524,413, Cl. 363-127.000.
Illinois Tool Works Inc.: *See—*
Levko, Fred, 4,524,248, Cl. 200-5.00B.
Peterson, Francis C.; Rodseth, William G.; and Spring, William A., 4,523,883, Cl. 411-171.000.
Ilsemann, Heino. Apparatus for introducing tape cassettes or the like and supplements into hinged boxes. 4,523,422, Cl. 53-566.000.
Imahori, Jumpei; and Sugie, Yutaka, to Sumitomo Gomu Kogyo Kabushiki Kaisha. Paving apparatus for a travelling path for vehicles of guide rail system. 4,523,542, Cl. 118-663.000.
Imai, Akio: *See—*
Yamamoto, Keisaku; Yoshida, Nobuyuki; Okamoto, Yasushi; Imai, Akio; Seki, Tomoaki; Furukawa, Hiroshi; and Saito, Yuichi, 4,523,618, Cl. 152-209.00R.
Imai, Kouichi: *See—*
Sawabe, Mitsuo; and Imai, Kouichi, 4,523,374, Cl. 29-597.000.
Imakoshi, Shigeyoshi: *See—*
Uchida, Hiroyuki; Nagaki, Takehiro; Imakoshi, Shigeyoshi; Soda, Yutaka; Sugita, Junkichi; and Sekiya, Tetsuo, 4,524,401, Cl. 360-113.000.
Imamura, Seiji: *See—*
Kondo, Kazuo; Imamura, Seiji; Saito, Shigemasa; Akimoto, Mamoru; and Sunaga, Mitsuo, 4,523,711, Cl. 228-198.000.
Impact Roller, Inc.: *See—*
Haugen, Gary; and Amundson, Everett, 4,523,674, Cl. 198-843.000.
Imperial Chemical Industries Limited: *See—*
Ballard, Denis G. H.; Courtis, Andrew; and Shirley, Ian M., 4,524,198, Cl. 526-292.100.
Carr, Paul L. I., 4,523,427, Cl. 57-248.000.
Imperial Chemical Industries, PLC: *See—*
Moss, Keith G.; Smith, Peter J.; and Woolhouse, Robin A., 4,523,984, Cl. 204-296.000.
Indicator Controls Corp.: *See—*
Martin, Marshal H., 4,524,305, Cl. 315-221.000.
Ingenieria del Calzado, S.A. (I.C.A.S.A.): *See—*
Orea Mateo, Fernando, 4,523,345, Cl. 12-133.00R.
Ingersoll Equipment Company: *See—*
Gault, Roger T., 4,523,489, Cl. 74-474.000.
Innovex Oy: *See—*
Latvus, Vaino P., 4,524,283, Cl. 290-1.00E.
Inohara, Masanobu, to Asics Corporation. Sport shoe sole. 4,523,393, Cl. 36-29.000.
Inoue, Akihisa: *See—*
Masumoto, Tsuyoshi; Inoue, Akihisa; and Hagiwara, Michiaki, 4,523,626, Cl. 164-463.000.
Inoue-Japax Research Incorporated: *See—*
Inoue, Kiyoshi, 4,523,480, Cl. 73-861.560.
Inoue, Kiyoshi, to Inoue-Japax Research Incorporated. Mass flow rotameter. 4,523,480, Cl. 73-861.560.
Inoue, Yoshiaki: *See—*
Takahashi, Hideyuki; Komatsu, Toshio; and Inoue, Yoshiaki, 4,524,015, Cl. 252-188.280.
Inoue, Yoshiharu; Tanimoto, Fumio; and Kitano, Hisao, to Nippon Petrochemicals Co., Ltd. Derivatives of norbornanes having hydrocarbon side chains and perfume compositions containing the same. 4,524,017, Cl. 252-522.00R.
Institut Fiziki Akademii Nauk Estonskoi SSR: *See—*
Erme, Enn K.; Lepasaar, Tiit P.; Ummer, Jury E.; and Kink, Rein A., 4,523,845, Cl. 356-333.000.
Institut Textile de France: *See—*
Voisin, Eugene J.; Matthelie , Jean-Pierre A.; and Mesny, Jacques A., 4,523,440, Cl. 66-146.000.
Institute Po Metaloznanie I Technologia Na Metalite: *See—*
Minchev, Pavel M.; Hristov, Hristomir D.; Balinov, Stoimen S.; Angelov, Mihail H.; and Yordanov, Nikolay V., 4,523,708, Cl. 228-37.000.
Intelab Medical Systems, Inc.: *See—*
Headlund, Larry M.; Marksteiner, Gary J.; and Sidell, Richard S., 4,524,419, Cl. 364-474.000.
Intermedicat GmbH: *See—*
Braun, Karl; and Fetzer, Jurgen, 4,523,695, Cl. 227-8.000.
International Business Machines Corporation: *See—*
Bjorklund, Gary C.; and Levenson, Marc D., 4,523,847, Cl. 356-349.000.
Cuomo, Jerome J.; Harper, James M. E.; Kaufman, Harold R.; and Speidell, James L., 4,523,971, Cl. 156-345.000.
Feenstra, David D.; Fey, Robert L.; and Goin, Cheryl A., 4,523,615, Cl. 141-1.000.
Greeson, James C., Jr., 4,524,352, Cl. 340-714.000.
Marinace, John C.; and McGibbon, Ralph C., 4,524,126, Cl. 430-311.000.
Shadwick, David T., 4,523,868, Cl. 400-208.000.
International Construction Equipment, Inc.: *See—*
Last, Anthony E. W., 4,523,647, Cl. 173-133.000.
International Flavors & Fragrances Inc.: *See—*
Sprecker, Mark A.; Belko, Robert P.; Van Loveren, Augustinus G.; and Hanna, Marie R., 4,524,020, Cl. 252-522.00R.
Wiegers, Wilhelmus J.; and Sprecker, Mark A., 4,524,021, Cl. 252-522.00R.
International Minerals & Chemical Corp.: *See—*
Seeney, Charles E., 4,524,053, Cl. 423-306.000.
International Steel Company: *See—*
Beastall, William H.; Ballew, Vernon R.; Collier, Richard D.; and Bagby, John T., 4,523,417, Cl. 52-273.000.
International Telephone and Telegraph Corporation: *See—*
Dantzig, Jonathan A.; Sevier, Peter E.; and Ungarean, Gary L., 4,523,624, Cl. 164-454.000.
Internationale Octrooi Maatschappij "Octropa" B.V.: *See—*
Bradley, Geoffrey; Hoarty, John T.; and Howarth, Ian M., 4,524,163, Cl. 524-5.000.
Inui, Toshiharu; and Moriguchi, Haruhiko, to Fuji Xerox Co., Ltd. Thermal head drive circuit. 4,524,368, Cl. 346-76.0PH.
Inuiya, Masafumi: *See—*
Nishizawa, Junichi; Tamamushi, Takashige; Shimanuki, Koji; and Inuiya, Masafumi, 4,524,391, Cl. 358-213.000.
Iowa State University Research Foundation, Inc.: *See—*
McClelland, John F., 4,523,577, Cl. 126-430.000.
Irie, Yoichiro: *See—*
Hisajima, Masahiko; Kimura, Hiroshi; Shigemura, Yutaka; Yada, Isao; Irie, Yoichiro; Morimoto, Kiyoshi; and Nagashima, Takashi, 4,523,754, Cl. 271-264.000.
Isemann, Franz: *See—*
Schwetz, Karl A.; Reinmuth, Klaus; Hunold, Klaus; and Isemann, Franz, 4,524,138, Cl. 501-90.000.
Isermann, Rolf, to Centra-Burkle GmbH & Co. Heating apparatus. 4,523,714, Cl. 236-46.00R.
Ishibashi, Kuniaki: *See—*
Kojima, Takuo; and Ishibashi, Kuniaki, 4,523,806, Cl. 350-96.250.
Ishii, Kenjiro: *See—*
Nakatani, Keiji; Yamagishi, Seiichi; and Ishii, Kenjiro, 4,524,315, Cl. 318-603.000.
Ishii, Sadamu: *See—*
Misaki, Susumu; Ishii, Sadamu; and Suefuji, Masahiro, 4,524,032, Cl. 260-465.00F.
Ishikawa, Mitsuaki, to Tokyo Shibaura Denki Kabushiki Kaisha. Method for detecting displacement of semiconductor device. 4,524,280, Cl. 250-548.000.
Ishimaru, Shingo: *See—*
Iwasa, Yasuo; and Ishimaru, Shingo, 4,524,130, Cl. 430-505.000.
Isler, Erwin, to H. Weidmann, AG. Tie rod assembly for rock borehole anchor. 4,523,880, Cl. 405-259.000.
Isobe, Mitsuo; Kutsuki, Tetsuo; Yamaguchi, Namio; and Tanaka, Toshihide, to Matsushita Electric Industrial Co., Ltd. Synchronous video detector circuit using phase-locked loop. 4,524,389, Cl. 358-188.000.
Isogai, Kiyoshi: *See—*
Asano, Masumi; Ugajin, Mitsuyuki; and Isogai, Kiyoshi, 4,523,763, Cl. 277-1.000.
Isono, Tokio: *See—*
Yamamoto, Kazuhiro; and Isono, Tokio, 4,523,659, Cl. 180-227.000.
Italtel Societa Italiana Telecomunicazioni S.p.A.: *See—*
Cottatelucci, Ezio, 4,524,462, Cl. 455-608.000.
Ito, Akihiko: *See—*
Iwata, Atsushi; Kaneko, Takao; Ito, Akihiko; Saito, Tadahiro; and Fukui, Hirokazu, 4,524,333, Cl. 331-17.000.
Ito, Hiroshi: *See—*
Harada, Nozomu; Ito, Hiroshi; and Adachi, Toshikazu, 4,523,544, Cl. 118-702.000.
Ito, Katsutsune: *See—*
Nishioka, Nobuaki; Makio, Tatsumi; and Ito, Katsutsune, 4,524,370, Cl. 346-155.000.
Ito, Kazuhiko: *See—*
Miyata, Hiroyasu; and Ito, Kazuhiko, 4,524,256, Cl. 200-86.00R.
Ito, Ran: *See—*
Uematsu, Takao; Honma, Yoshiharu; Tanno, Seikichi; Ito, Ran; Matsubayashi, Jun; and Yoshida, Tomio, 4,523,668, Cl. 192-107.00M.
ITT Corporation: *See—*
Bilson, Edward B., 4,523,693, Cl. 220-337.000.
ITT Industries, Inc.: *See—*
Belart, Juan; Burgdorf, Jochen; Kircher, Dieter; Bleckmann, Hans-Wilhelm; and Weise, Lutz, 4,523,791, Cl. 303-92.000.
Belart, Juan; and Burgdorf, Jochen, 4,523,792, Cl. 303-92.000.
Giebel, Burkhard, 4,524,429, Cl. 365-154.000.
Ivy, Jim S.; and Gray, Willie C. Fishing device. 4,523,403, Cl. 43-17.000.
Iwakura, Hideaki: *See—*
Oka, Joji; Iwakura, Hideaki; Ando, Narumi; Iwasaki, Kiyotoshi; and Shindow, Yoshio, 4,524,111, Cl. 428-551.000.
Iwasa, Yasuo; and Ishimaru, Shingo, to Fuji Photo Film Co., Ltd. Silver halide color photographic light-sensitive materials. 4,524,130, Cl. 430-505.000.
Iwasaki, Hiroshi: *See—*
Kondo, Mitsuru; Iwasaki, Hiroshi; Kanda, Nobuo; Omatsu, Masayuki; and Omura, Haruo, 4,524,373, Cl. 346-221.000.
Iwasaki, Kiyotoshi: *See—*
Oka, Joji; Iwakura, Hideaki; Ando, Narumi; Iwasaki, Kiyotoshi; and Shindow, Yoshio, 4,524,111, Cl. 428-551.000.
Iwata, Atsushi; Kaneko, Takao; Ito, Akihiko; Saito, Tadahiro; and Fukui, Hirokazu, to Nippon Telegraph & Telephone Public Corporation; and Fujitsu Limited. Phase-locked loop using integrated switched filter. 4,524,333, Cl. 331-17.000.
Iwata, Toshio, to Mitsubishi Denki Kabushiki Kaisha. Ignition timing control system for internal-combustion engine. 4,523,567, Cl. 123-425.000.

J. E. Hanger & Company Limited: *See*—
May, Denis R. W., 4,523,338, Cl. 3-21.000.
J.P. Products, Inc.: *See*—
Cheer, David A., 4,523,780, Cl. 285-399.000.
J. T. Baker Chemical Company: *See*—
Crane, Laura J.; and Ramsden, Hugh E., 4,523,997, Cl. 210-635.000.
Jablway, Ali N.; and Mitchell, Alexander M., to AT&T Technologies, Inc. Method and apparatus for testing cable wire connected to terminals at a remote location. 4,524,321, Cl. 324-66.000.
Jacobi, Nathan: *See*—
Barmatz, Martin B.; Stoneburner, James D.; Jacobi, Nathan; and Wang, Taylor G., 4,523,682, Cl. 209-638.000.
Jahns, Hans O.: *See*—
Finucane, Raymond G.; and Jahns, Hans O., 4,523,879, Cl. 405-217.000.
Jakubowski, Heinz: *See*—
Biber, Klaus; Grunvogel, Karl; Lemcke, Ulrich; Jakubowski, Heinz; and Schulz, Kurt, 4,523,732, Cl. 248-123.100.
Jakubowski, James J.: *See*—
Meyer, Wilfred C.; and Jakubowski, James J., 4,523,991, Cl. 209-166.000.
Janssen Pharmaceutica N.V.: *See*—
Heeres, Jan; Backx, Leo J. J.; and Mostmans, Joseph H., 4,524,110, Cl. 428-537.100.
Jark, Jens K.: *See*—
Johansen, Claus J.; Jark, Jens K.; and Stefansson, Thorvardur S., 4,523,739, Cl. 251-139.000.
Jeans, Edward L., to Cadbury Schweppes Limited. Liquid dispensing package. 4,523,697, Cl. 222-185.000.
Jenkins, Robert G.; and Shinn, Dennis B., to GTE Products Corporation. Method for reducing striations in fused silica. 4,523,939, Cl. 65-32.000.
Jepsen, David B., to Tandon Corporation. Magnetic disk memory power supply. 4,524,399, Cl. 360-97.000.
Joeres, Ulrich: *See*—
Bosserhoff, Hartmut; Steinhagen, Wolfgang; and Joeres, Ulrich, 4,524,346, Cl. 340-347.0CC.
Joffee, Irving B.: *See*—
Pall, David B.; Degen, Peter J.; Joffee, Irving B.; Foss, Warren M.; and Gsell, Thomas C., 4,523,995, Cl. 210-504.000.
Johansen, Claus J.; Jark, Jens K.; and Stefansson, Thorvardur S., to Danfoss A/S. Magnetic valve for refrigeration plant. 4,523,739, Cl. 251-139.000.
John Wyeth & Brother Limited: *See*—
Mughal, Ahmed S.; and Holmes, David S., 4,524,060, Cl. 424-19.000.
Johnson, David L., to Schlumberger Technology Corporation. Measurement of porosity and formation factor using slow compressional waves. 4,524,432, Cl. 367-25.000.
Johnson, Horace J., to Cadillac Meter Company. Fluid flow measuring device. 4,523,479, Cl. 73-861.350.
Johnson, Stephen C.: *See*—
Cho, James R.; and Johnson, Stephen C., 4,524,061, Cl. 424-60.000.
Johnson, Stephen G.; and Labadini, William M., to GTE Products Corporation. Discharge lamp operating apparatus and method. 4,523,795, Cl. 315-97.000.
Johnson, Thomas H., to Shell Oil Company. Arene alkylation with metal oxide-niobium halide/oxide catalysts. 4,524,229, Cl. 585-463.000.
Johnson, Wilfred B. Heating and cooling system using ground air. 4,523,519, Cl. 98-31.000.
Johst, Willy; and Elsass, Henrik. Liquid ring pump. 4,523,893, Cl. 417-68.000.
Jones, Thomas B., to Xerox Corporation. Developer roller metering blade. 4,523,833, Cl. 355-3.0DD.
Joshua, Henry. Filter-degasser. 4,523,934, Cl. 55-189.000.
Joubert, Philippe, to Uranium Pechiney. Method of purifying uraniferous aqueous solutions. 4,524,001, Cl. 210-713.000.
Judd, Duncan B.: *See*—
Price, Barry J.; Clitherow, John W.; Bradshaw, John; Martin-Smith, Michael; Judd, Duncan B.; and Hayes, Roger, 4,524,071, Cl. 514-272.000.
Julian, John C.; Sloan, Jerry L.; and Wheeler, Lee A., to Lamb-Weston, Inc. Apparatus for making waffle-cut potato. 4,523,503, Cl. 83-403.000.
K. A. Schmersal GmbH & Co.: *See*—
Schulz, Siegfried, 4,524,251, Cl. 200-42.00R.
Kaakinen, Kari A. Procedure and means for establishing and recording errors of the eye. 4,523,820, Cl. 351-206.000.
Kaburagi, Katsuhiko: *See*—
Kaminaka, Motofumi; Takashima, Hiroyuki; and Kaburagi, Katsuhiko, 4,523,530, Cl. 110-264.000.
Kabushiki Kaisha Daikin Seisakusho: *See*—
Fukunaga, Takao, 4,523,496, Cl. 74-866.000.
Kabushiki Kaisha Kawai Gakki Seisakusho: *See*—
Ezawa, Sadaaki; and Kitagawa, Hiroshi, 4,524,269, Cl. 235-449.000.
Kabushiki Kaisha Maruyama Seisakucho: *See*—
Shimizu, Yoichi, 4,523,614, Cl. 139-355.000.
Kabushiki Kaisha Nakajima Seisakujo: *See*—
Ogasawara, Shingo; and Nakajima, Hideo, 4,523,547, Cl. 119-52.00B.
Kabushiki Kaisha Orii Jidoki Seisakusho: *See*—
Orii, Masaru, 4,523,889, Cl. 414-752.000.
Kabushiki Kaisha Suwa Seikosha: *See*—
Ota, Tadashi, 4,523,811, Cl. 350-333.000.
Ushikoshi, Kenichi, 4,523,857, Cl. 368-157.000.
Kabushiki Kaisha Tokai Rika Denki Seisakusho: *See*—
Yoshida, Hatsuyoshi; Fukutome, Michio; Ohuchi, Makoto; and Ohta, Jyun, 4,524,254, Cl. 200-83.00R.
Kabushiki Kaisha Toshiba: *See*—
Abou, Shouji, 4,524,329, Cl. 330-253.000.
Kabushiki Kaisha Toyota Chuo Kenkyusho: *See*—
Kuno, Toshitaka; Moribe, Hiroshi; and Kamiya, Atsushi, 4,524,313, Cl. 318-563.000.
Takeuchi, Takashi; Takahashi, Hideaki; and Kondo, Haruyoshi, 4,524,264, Cl. 219-497.000.
Kadota, Toshimi; Suzuki, Jugoro; and Matsui, Shigeki, to Shimadzu Corporation. Dilution pipetter. 4,523,484, Cl. 73-864.120.
Kaino, Jon C. Buoyant emergency life saving device. 4,523,913, Cl. 441-81.000.
Kaiser, Steven W., to Union Carbide Corporation. Production of hydrocarbons with aluminophosphate molecular sieves. 4,524,234, Cl. 585-638.000.
Kajita, Shunsuke: *See*—
Ohsawa, Eiji; and Kajita, Shunsuke, 4,523,715, Cl. 236-49.000.
Kajiya, Seitaro: *See*—
Sakano, Isao; Yokoyama, Tatsuro; Kajiya, Seitaro; Okazaki, Yutaka; Tokuda, Hiroshi; Kawazura, Hiroshi; Kumakura, Mikio; and Awaya, Akira, 4,524,147, Cl. 514-274.000.
Kakeno, Sadao; Ameyama, Minoru; Ichikawa, Kenichi; Umezawa, Michio; and Yamaguchi, Tomoyuki, to Ricoh Company, Ltd. Receptacle for waste ink collection in ink jet recording apparatus. 4,524,365, Cl. 346-75.000.
Kakiuchi, Hideyuki: *See*—
Shimura, Yoshimasa; Kakiuchi, Hideyuki; Minamikawa, Yoshihisa; and Kawasaki, Katsuhiro, 4,524,277, Cl. 250-397.000.
Kaltenbach & Voight GmbH & Co.: *See*—
Braetsch, Hartmut; and Herter, Karl, 4,523,911, Cl. 433-101.000.
Kaminaka, Motofumi; Takashima, Hiroyuki; and Kaburagi, Katsuhiko, to Sumitomo Metal Industries, Ltd. Powdery coal burner. 4,523,530, Cl. 110-264.000.
Kamiya, Atsushi: *See*—
Kuno, Toshitaka; Moribe, Hiroshi; and Kamiya, Atsushi, 4,524,313, Cl. 318-563.000.
Kamiya, Masashi: *See*—
Yamashita, Mitsuo; Oda, Goro; and Kamiya, Masashi, 4,523,800, Cl. 350-6.700.
Kan, Jean-Paul; Biziere, Kathleen; and Wermuth, Camille-Georges, to Sanofi. Aminated derivatives of pyridazine substituted in 6 position by a heterocycle or an alicycle and compositions, said derivatives being active on the central nervous system. 4,524,070, Cl. 514-230.000.
Kanai, Akira: *See*—
Yoshioka, Junichi; Koizumi, Koichi; Kanai, Akira; and Shiba, Kazuo, 4,523,410, Cl. 51-166.00R.
Kanda, Nobuo: *See*—
Kondo, Mitsuru; Iwasaki, Hiroshi; Kanda, Nobuo; Omatsu, Masayuki; and Omura, Haruo, 4,524,373, Cl. 346-221.000.
Kane, James, to RCA Corporation. Method of fabricating a silicon lens array. 4,524,127, Cl. 430-321.000.
Kaneda, Aizo: *See*—
Sato, Masaaki; Kaneda, Aizo; and Watanabe, Makio, 4,524,369, Cl. 346-135.100.
Kanegafuchi Kagaku Kogyo Kabushiki Kaisha: *See*—
Maeda, Hirofumi; Nakamura, Kyoichi; and Hatamoto, Toshihiro, 4,524,154, Cl. 521-58.000.
Yamazaki, Kaoru; Kurioka, Shunichiro; Sakata, Mitsuya; and Ogawa, Takahiro, 4,524,193, Cl. 526-79.000.
Kaneko, Takao: *See*—
Iwata, Atsushi; Kaneko, Takao; Ito, Akihiko; Saito, Tadahiro; and Fukui, Hirokazu, 4,524,333, Cl. 331-17.000.
Kanzaki Paper Manufacturing Co., Ltd.: *See*—
Kondo, Mitsuru; Iwasaki, Hiroshi; Kanda, Nobuo; Omatsu, Masayuki; and Omura, Haruo, 4,524,373, Cl. 346-221.000.
Kaplan, Donald S.; and Muth, Ross R. Polymers for injection molding of absorbable surgical devices. 4,523,591, Cl. 128-334.00R.
Kapoor, Deepak: *See*—
Wan, Chung-Chu; Wang, Rong Y.; and Kapoor, Deepak, 4,523,950, Cl. 75-123.00B.
Karisch, Edward P.: *See*—
Moore, Robert A.; and Karisch, Edward P., 4,524,325, Cl. 324-375.000.
Karl Kassbohrer Fahrzeugwerke GmbH: *See*—
Scheibel, Horst; and Haug, Walter, 4,523,398, Cl. 37-220.000.
Karsunky, Ulrich: *See*—
Ong, Sienling; Karsunky, Ulrich; and Schmidt, Helmut, 4,523,922, Cl. 8-471.000.
Kass, John J.: *See*—
Keenan, Thomas F.; and Kass, John J., 4,523,655, Cl. 180-9.100.
Kasuga, Masao, to Victor Company of Japan, Limited. Equalizer capable of varying the center frequency, quality factor, and gain to perform various frequency characteristics. 4,524,422, Cl. 364-724.000.
Katada, Keiichiro: *See*—
Nishiyama, Masao; Katada, Keiichiro; and Akimoto, Yoshiteru, 4,524,044, Cl. 264-328.600.
Kataoka, Hiroshi. Method and apparatus for wrapping metal coil. 4,523,421, Cl. 53-399.000.
Kato Hatsujo Kaisha Ltd.: *See*—
Ohkata, Ichizo, 4,523,605, Cl. 137-62.000.
Kato, Mamoru: *See*—
Maekawa, Kouji; Kato, Mamoru; Nakagama, Syoji; and Sano, Yumiko, 4,524,117, Cl. 430-44.000.

Kato, Masatake, to Canon Kabushiki Kaisha. Focus detecting device. 4,523,828, Cl. 354-403.000.

Katsuyama, Mikizo: *See—*
Nagashima, Masato; Katsuyama, Mikizo; and Yamamoto, Masahiro, 4,523,805, Cl. 350-96.240.

Kauer, Harald: *See—*
Pietzsch, Ludwig; Kauer, Harald; Duren, Johannes; and Kuhn, Hugo, 4,523,487, Cl. 74-378.000.

Kaufman, Harold R.: *See—*
Cuomo, Jerome J.; Harper, James M. E.; Kaufman, Harold R.; and Speidell, James L., 4,523,971, Cl. 156-345.000.

Kaufman, Jack W.: *See—*
Blake, Joseph W., III; and Kaufman, Jack W., 4,523,707, Cl. 227-19.000.

Kawachi, Youji: *See—*
Hagio, Shigeru; and Kawachi, Youji, 4,524,104, Cl. 428-341.000.

Kawakami, Yoshio, to TDK Corporation. Magnetic recording medium. 4,524,108, Cl. 428-480.000.

Kawakatsu, Akira; and Yamamoto, Fumio, to Tokyo Shibaura Denki Kabushiki Kaisha. Incandescent lamp with film of alternately stacked layers. 4,524,410, Cl. 362-255.000.

Kawakita, Tetsuya: *See—*
Toyoshi, Seiji; Tanegawa, Tetsuo; Saeki, Masaru; and Kawakita, Tetsuya, 4,523,999, Cl. 210-639.000.

Kawamura, Fumio: *See—*
Funabashi, Kiyomi; Takagi, Toshio; Kawamura, Fumio; and Kikuchi, Makoto, 4,524,153, Cl. 521-26.000.

Kawasaki, Kanji: *See—*
Okazaki, Tetuji; Kawasaki, Kanji; and Hirose, Masayoshi, 4,524,252, Cl. 200-38.00E.

Kawasaki, Katsuhiro: *See—*
Shimura, Yoshimasa; Kakiuchi, Hideyuki; Minamikawa, Yoshihisa; and Kawasaki, Katsuhiro, 4,524,277, Cl. 250-397.000.

Kawazura, Hiroshi: *See—*
Sakano, Isao; Yokoyama, Tatsuro; Kajiya, Seitaro; Okazaki, Yutaka; Tokuda, Hiroshi; Kawazura, Hiroshi; Kumakura, Mikio; and Awaya, Akira, 4,524,147, Cl. 514-274.000.

Kay, David J.: *See—*
Cottrell, John S.; Turner, Patrick J.; and Kay, David J., 4,524,275, Cl. 250-298.000.

Kayser, Harald; and Pfeiffer, Wilfried, to U.S. Philips Corporation. X-ray examination apparatus having at least one film storage magazine. 4,523,420, Cl. 53-266.00R.

Kazmaier, Peter M.: *See—*
Baranyi, Giuseppa; Kazmaier, Peter M.; Hsiao, Cheng-Kuo; and Burt, Richard A., 4,524,218, Cl. 564-307.000.

Kazuoka, Koji: *See—*
Suganuma, Tetsuya; Kazuoka, Koji; Fujita, Shuichi; Takahashi, Yoshitaka; Ueda, Katsuhiko; and Nakamura, Hitoshi, 4,524,046, Cl. 419-8.000.

Keenan, Thomas F.; and Kass, John J., to Deere & Company. Vehicle frame transmission mounting assembly. 4,523,655, Cl. 180-9.100.

Keene Engineering, Inc.: *See—*
Graefe, Ralph G., 4,523,989, Cl. 209-44.000.

Keldan Industries Limited: *See—*
Daniel, Kelvin J., 4,523,458, Cl. 73-119.00A.

Kennecott Corporation: *See—*
Bishara, William, 4,523,531, Cl. 110-336.000.

Kennedy, John M.; and Kennedy, William R. Door frame and door assembly for a mine stopping. 4,523,406, Cl. 49-254.000.

Kennedy, Joseph P.; and Hiza, Misao, to University of Akron. Synthesis and copolymerization of asymmetric polymers. 4,524,188, Cl. 525-333.700.

Kennedy, William R.: *See—*
Kennedy, John M.; and Kennedy, William R., 4,523,406, Cl. 49-254.000.

Keogh, Michael J.: *See—*
Barnabeo, Austin E.; and Keogh, Michael J., 4,524,201, Cl. 528-395.000.

Kerman, Stephen: *See—*
Faggin, Federico; Klein, Jerry A.; Yazolino, Lauren F.; Korody, Robert G.; Ha, Eric P. L.; and Kerman, Stephen, 4,524,244, Cl. 179-2.0DP.

Kesse, Bernard G.: *See—*
Freeman, D. Bruce; Kesse, Bernard G.; and Thiel, Philip P., 4,523,541, Cl. 118-202.000.

Keystone Engineering Company: *See—*
Fritz, Conrad M., 4,523,793, Cl. 384-604.000.

Khan, Ausat A., to Du Pont de Nemours, E. I., and Company. Process for making vinylidene fluoride containing fluoroelastomers. 4,524,197, Cl. 526-206.000.

Kienlein, Kurt; and Reese, Ralph D., to Porter, W. Duncan. Beer keg accessories. 4,523,698, Cl. 222-185.000.

Kigawa, Shuji; and Otake, Eiji, to Konishiroku Photo Industry Co., Ltd. Original document inserting device for copying apparatus. 4,523,752, Cl. 271-9.000.

Kikuchi, Atsuo: *See—*
Sakai, Hiromu; Ezaki, Sazo; and Kikuchi, Atsuo, 4,523,448, Cl. 72-185.000.

Kikuchi, Juro, to Olympus Optical Co., Ltd. Lens system for optically recorded disks. 4,523,817, Cl. 350-465.000.

Kikuchi, Makoto: *See—*
Funabashi, Kiyomi; Takagi, Toshio; Kawamura, Fumio; and Kikuchi, Makoto, 4,524,153, Cl. 521-26.000.

Killman, David L.; and Killman, Loraine C. Protector for lazy-tong fence. 4,523,745, Cl. 256-1.000.

Killman, Loraine C.: *See—*
Killman, David L.; and Killman, Loraine C., 4,523,745, Cl. 256-1.000.

Kim, Bang M., to General Electric Company. Continuous ion exchange process using thermally regenerable liquid ion exchangers. 4,523,998, Cl. 210-638.000.

Kim, Chang K.: *See—*
Lee, Byung S.; and Kim, Chang K., 4,524,136, Cl. 435-139.000.

Kim, Young B.: *See—*
Efron, Edward; McPherson, James O.; and Kim, Young B., 4,524,444, Cl. 371-24.000.

Kimberly-Clark Corporation: *See—*
Truman, Charles L., 4,523,336, Cl. 2-69.000.

Kimmelman, Samuel, to Parker Hannifin Corporation. Connector adaptor. 4,523,797, Cl. 339-147.00R.

Kimoto, Manabu, to Nippon Electric Co., Ltd. Timing signal controlled information processing system. 4,524,417, Cl. 364-200.000.

Kimura, Hiroshi: *See—*
Hisajima, Masahiko; Kimura, Hiroshi; Shigemura, Yutaka; Yada, Isao; Irie, Yoichiro; Morimoto, Kiyoshi; and Nagashima, Takashi, 4,523,754, Cl. 271-264.000.

Kimura, Keiichi: *See—*
Shono, Toshiyuki; Kimura, Keiichi; and Maeda, Takumi, 4,523,994, Cl. 210-500.200.

Kimura, Tetsuo; Fujii, Hirofumi; Yuasa, Hayami; and Yonezawa, Tatuo, to Nittan Company, Limited. Smoke detector. 4,524,351, Cl. 340-629.000.

Kindgren, Lee; Scott, William B.; and Voges, Robert W., to W. A. Whitney Corp. Hole forming machine with adjustable work clamps. 4,523,749, Cl. 269-32.000.

King, Charles, to Courser, Incorporated. Electro-optical level detector. 4,524,282, Cl. 250-577.000.

Kink, Rein A.: *See—*
Erme, Enn K.; Lepasaar, Tiit P.; Ummer, Jury E.; and Kink, Rein A., 4,523,845, Cl. 356-333.000.

Kircher, Dieter: *See—*
Belart, Juan; Burgdorf, Jochen; Kircher, Dieter; Bleckmann, Hans-Wilhelm; and Weise, Lutz, 4,523,791, Cl. 303-92.000.

Kirschnek, Helmut: *See—*
Steinberger, Helmut; Kirschnek, Helmut; and Pfeiffer, Josef, 4,524,172, Cl. 524-506.000.

Kishi, Noriyuki: *See—*
Yamato, Akihiro; and Kishi, Noriyuki, 4,523,571, Cl. 123-492.000.

Kishimoto, Shinzo; Ohno, Shigeru; and Tsujikawa, Teruaki, to Fuji Photo Film Co., Ltd. Method for processing color photographic light-sensitive material. 4,524,129, Cl. 430-393.000.

Kita, Nobuyuki: *See—*
Sawa, Seiji; and Kita, Nobuyuki, 4,523,597, Cl. 128-652.000.

Kitagawa, Hiroshi: *See—*
Ezawa, Sadaaki; and Kitagawa, Hiroshi, 4,524,269, Cl. 235-449.000.

Kitagawa Iron Works Co. Ltd.: *See—*
Nobukawa, Akira; and Sawaguchi, Tatsue, 4,523,632, Cl. 165-47.000.

Kitano, Hisao: *See—*
Inoue, Yoshiharu; Tanimoto, Fumio; and Kitano, Hisao, 4,524,017, Cl. 252-522.00R.

Kitano, Kissho: *See—*
Duvdevani, Ilan; Eckert, John A.; Schulz, Donald N.; and Kitano, Kissho, 4,523,929, Cl. 44-62.000.

Kiyokawa, Morio, to Mitsubishi Denki Kanushiki Kaisha. Numerical controller. 4,524,414, Cl. 364-171.000.

Kizler, Wolfgang; Sieder, Wolfgang; Schopf, Hans-Joachim; Dobler, Helmut; and Gluck, Roland, to Daimler-Benz Aktiengesellschaft. Axially flexible drive disc. 4,523,916, Cl. 464-98.000.

Klatt, Alfred: *See—*
Gudat, Wolfgang; Klatt, Alfred; and Sebesta, Gunter, 4,523,513, Cl. 91-427.000.

Klaver, Rudy F.: *See—*
Chin, Thomas G.; Klaver, Rudy F.; and Alston, Arthur, 4,523,860, Cl. 374-27.000.

Klein, Jerry A.: *See—*
Faggin, Federico; Klein, Jerry A.; Yazolino, Lauren F.; Korody, Robert G.; Ha, Eric P. L.; and Kerman, Stephen, 4,524,244, Cl. 179-2.0DP.

Klein, Joseph T.: *See—*
Davis, Larry; and Klein, Joseph T., 4,524,209, Cl. 546-148.000.

Klein-Wanner Societe Anonyme: *See—*
Schirmann, Francis, 4,524,084, Cl. 426-590.000.

Kleinophorst Geb. Schadel, Edith; and Grosskreuz, Gerhard. Apparatus for controlling the filling of containers. 4,523,616, Cl. 141-83.000.

Kline, James R.; and Brand, Peter, to Acutherm, Ltd. Thermally actuated diffuser. 4,523,713, Cl. 236-1.00C.

Kloker, Werner; and Kraft, Klaus, to Bayer Aktiengesellschaft. Use of 1,4-dihydroxynaphthalene in the hardening of ethylenically unsaturated compounds. 4,524,177, Cl. 525-14.000.

Knor, Bernhard: *See—*
Payrhammer, Bernd; and Knor, Bernhard, 4,523,839, Cl. 355-68.000.

Knox, Granville S. Pipe coupling and sealing device therefor. 4,523,779, Cl. 285-294.000.

Knox, Kenneth H.: *See—*
Larkin, Mark E.; and Knox, Kenneth H., 4,523,691, Cl. 220-266.000.

Koban, Hans G.: *See—*
Drauz, Karlheinz; Koban, Hans G.; Martens, Jurgen; and Schwarze, Werner, 4,524,211, Cl. 548-111.000.

Kobayashi, Tatsuo, to Toyota Jidosha Kabushiki Kaisha. Knocking control system in engine. 4,523,566, Cl. 123-425.000.
Kochanek, George E.: *See*—
Browne, Vance d.; and Kochanek, George E., 4,523,474, Cl. 73-724.000.
Kocks Technik GmbH & Co.: *See*—
Faste, Heinrich; and Bindernagel, Ali, 4,523,622, Cl. 164-66.100.
Zacharias, Theodor, 4,523,455, Cl. 73-49.500.
Kodama, Hisashi: *See*—
Arai, Fuminao; Kodama, Hisashi; and Ono, Takuro, 4,523,551, Cl. 123-90.460.
Kodera, Masao; Akita, Shigeyuki; and Yoshino, Yasuhisa, to Nippon Soken, Inc. Obstacle detecting device for vehicles. 4,524,356, Cl. 340-904.000.
Kohler, David E.: *See*—
Maliszewski, Theodore V.; and Kohler, David E., 4,523,721, Cl. 241-61.000.
Kohlpoth, Walter: *See*—
Schmidt, Gerhard; and Kohlpoth, Walter, 4,524,048, Cl. 422-159.000.
Kohzai, Tetsuo: *See*—
Terayama, Fusaji; Kohzai, Tetsuo; and Murai, Naoyuki, 4,523,685, Cl. 212-247.000.
Koike, Eishi, to Ozen Corporation. Simplified sound-reproducing device having an external output shaft. 4,524,437, Cl. 369-67.000.
Koizumi, Koichi: *See*—
Yoshioka, Junichi; Koizumi, Koichi; Kanai, Akira; and Shiba, Kazuo, 4,523,410, Cl. 51-166.00R.
Kojima, Noboru: *See*—
Shibata, Akira; Komatsu, Keiichi; Kuroyanagi, Tomomitsu; and Kojima, Noboru, 4,524,380, Cl. 358-316.000.
Kojima, Takuo; and Ishibashi, Kuniaki, to Fuji Photo Optical Co., Ltd. Method and apparatus for restoring the light transmittance of an image-transmitting optical fiber bundle used in a fiber optic endoscope. 4,523,806, Cl. 350-96.250.
Kojima, Teiryo: *See*—
Negishi, Takao; Kojima, Teiryo; and Tomiita, Kazuo, 4,523,428, Cl. 57-288.000.
Kokusai Denshin Denwa Kabushiki Kaisha: *See*—
Sakaguchi, Haruo; Seki, Norio; Yamamoto, Shu; and Okada, Akira, 4,523,802, Cl. 350-96.120.
Kolodjski, Kenneth J., to TSI Incorporated. Constant temperature anemometer having an enhanced frequency response. 4,523,462, Cl. 73-204.000.
Komatsu, Fumito. 4-Pole electric motor. 4,524,293, Cl. 310-46.000.
Komatsu, Keiichi: *See*—
Shibata, Akira; Komatsu, Keiichi; Kuroyanagi, Tomomitsu; and Kojima, Noboru, 4,524,380, Cl. 358-316.000.
Komatsu, Toshio: *See*—
Takahashi, Hideyuki; Komatsu, Toshio; and Inoue, Yoshiaki, 4,524,015, Cl. 252-188.280.
Kominek, Leo A ; and Wolf, Holly J., to Upjohn Company, The. Process for preparing 1,2-dehydro steroids. 4,524,134, Cl. 435-61.000.
Kondo, Haruyoshi: *See*—
Takeuchi, Takashi; Takahashi, Hideaki; and Kondo, Haruyoshi, 4,524,264, Cl. 219-497.000.
Kondo, Kazuo; Imamura, Seiji; Saito, Shigemasa; Akimoto, Mamoru; and Sunaga, Mitsuo, to Fuji Electric Co., Ltd. Method for bonding silver-based contact. 4,523,711, Cl. 228-198.000.
Kondo, Mitsuru; Iwasaki, Hiroshi; Kanda, Nobuo; Omatsu, Masayuki; and Omura, Haruo, to Kanzaki Paper Manufacturing Co., Ltd. Fluoran derivatives as new compounds, process for preparing the same and recording system utilizing the same as colorless chromogenic material. 4,524,373, Cl. 346-221.000.
Konishi, Masahiro, to Fuji Photo Film Co., Ltd. Image reproducing apparatus. 4,524,381, Cl. 358-29.000.
Konishiroku Photo Industry Co., Ltd.: *See*—
Abe, Yoshinori; and Matsunawa, Masahiko, 4,524,388, Cl. 358-163.000.
Kigawa, Shuji; and Otake, Eiji, 4,523,752, Cl. 271-9.000.
Konneker, Reinhard: *See*—
Mezger, Hans; and Konneker, Reinhard, 4,523,555, Cl. 123-193.00C.
Koomey Blowout Preventers, Inc.: *See*—
Howard, Roland M., Jr., 4,523,639, Cl. 166-55.000.
Kooyumjian, Thomas A., to Belmor Manufacturing Company. Winterfront with adjustable center opening. 4,523,657, Cl. 180-68.100.
Koppenberg, Bruce G. Hanger fastener. 4,523,413, Cl. 52-139.000.
Kordomenos, Panagiotis I.: *See*—
Alexander, Delores J.; Kurple, Kenneth R.; and Kordomenos, Panagiotis I., 4,524,192, Cl. 525-440.000.
Korf, Rainer: *See*—
Breustedt, Alfred; Taschner, Heinz; Korf, Rainer; and Lorenz, Renate, 4,523,912, Cl. 433-202.000.
Kormoczy, Gyorgy: *See*—
Szejtli, Jozsef; Budai, Zsuzsanna; Radvany nee Hegedus, Erzsebet; Papp, Laszlo ; Kormoczy, Gyorgy; and Pap nee Imrenyi, Gabriella, 4,524,068, Cl. 514-58.000.
Korody, Robert G.: *See*—
Faggin, Federico; Klein, Jerry A.; Yazolino, Lauren F.; Korody, Robert G.; Ha, Eric P. L.; and Kerman, Stephen, 4,524,244, Cl. 179-2.0DP.
Koshidaka, Yukio: *See*—
Hayashi, Yoshiaki; Haraguchi, Kouichi; and Koshidaka, Yukio, 4,524,045, Cl. 264-521.000.
Kostanty, Raymond G.; Sciabbarrasi, Michael; and Grossman, Walter B., to American Transceiver Corp. Helmet-supported radio transceiver and broadcast receiver system. 4,524,461, Cl. 455-79.000.
Kosuge, Tokuo, to Hitachi, Ltd. Apparatus and method for controlling air amount upon engine start. 4,523,561, Cl. 123-339.000.
Koszi, Louis A.: *See*—
Hartman, Robert L.; Koszi, Louis A.; Williams, Richard S.; and Zilko, John L., 4,523,961, Cl. 148-1.500.
Kotzur, Frank W., to Windings, Inc. Winding flexible material with layer shifting. 4,523,723, Cl. 242-43.00R.
Kotzur, Joachim: *See*—
Albers, Rolf; Aschenbruck, Emil; Neuhaus, Gunter; and Kotzur, Joachim, 4,523,764, Cl. 277-3.000.
Kovalenko, Vitaly I.: *See*—
Eberling, Igor L.; Tereschenko, Lev A.; Nikolaev, Nikolai I.; Yakovlev, Arian M.; Kovalenko, Vitaly I.; Lipatov, Nikolai K.; Tatevosian, Ruben A.; and Titov, Mikhail Y., 4,524,319, Cl. 324-65.00R.
Kovalsky, Stephen J., to Sun Chemical Corporation. Manufacture of printing inks. 4,523,952, Cl. 106-20.000.
Kowol, Adelheid. Twin or forked boom for a sailing surfboard. 4,523,537, Cl. 114-97.000.
Koyo Seiko Company Limited: *See*—
Yasui, Hiroyoshi; Yoshida, Teruo; Ueno, Hiroshi; and Tsumura, Katsunori, 4,523,862, Cl. 384-564.000.
Kraft, Klaus: *See*—
Kloker, Werner; and Kraft, Klaus, 4,524,177, Cl. 525-14.000.
Kraftwerk Union Aktiengesellschaft: *See*—
Muller, Thomas; Lehner, Gunter; and Gugel, Georg, 4,523,470, Cl. 73-623.000.
Krajcovic, John: *See*—
Diggle, Edmund A., Jr.; and Krajcovic, John, 4,523,389, Cl. 34-105.000.
Krakauer, Lawrence; and Bliss, Lawrence, to Kronos, Inc. Method of and apparatus for discriminating between various types of check-out periods in employee time-recording systems and the like. 4,524,266, Cl. 235-377.000.
Kranz, Eckart: *See*—
Bonse, Gerhard; Lantzsch, Reinhard; Dorr, Henning; Kreiss, Wolfgang; Dickore, Karlfried; Ditgens, Klaus; and Kranz, Eckart, 4,524,205, Cl. 544-223.000.
Kranz, Joachim: *See*—
Fechner, Wolf D.; Polster, Rudolf; Kranz, Joachim; and Hartmann, Eduard, 4,523,958, Cl. 106-288.00Q.
Krauser, Robert S. Method and apparatus for treating ailments. 4,523,589, Cl. 128-203.270.
Krautkramer-Branson, Inc.: *See*—
Diederichs, Rolf; and Volkmann, Klaus, 4,523,467, Cl. 73-573.000.
Kreeger, Elsmer W., to Pinckney Molded Plastics, Inc. Multilevel stacking container. 4,523,681, Cl. 206-507.000.
Kreider, James F.: *See*—
Cockrum, Charles A.; Chia, Joan K.; and Kreider, James F., 4,524,378, Cl. 357-71.000.
Kreiss, Wolfgang: *See*—
Bonse, Gerhard; Lantzsch, Reinhard; Dorr, Henning; Kreiss, Wolfgang; Dickore, Karlfried; Ditgens, Klaus; and Kranz, Eckart, 4,524,205, Cl. 544-223.000.
Kreitzer, Melvyn H., to Vivitar Corporation. Catadioptric lens. 4,523,816, Cl. 350-444.000.
Kremer, Bernard: *See*—
Binder, Germaine; and Kremer, Bernard, 4,524,241, Cl. 174-119.00R.
Kremer, Manfred, to Still GmbH. Drive units for motor vehicles with internal combustion engine electric drives. 4,524,286, Cl. 290-45.000.
Krepski, Larry R.: *See*—
Heilmann, Steven M.; Krepski, Larry R.; and Rasmussen, Jerald K., 4,524,221, Cl. 568-322.000.
Kretschmer, Frank F., to United States of America, Navy. P2 Polyphase code expander-compressor. 4,524,363, Cl. 343-17.2PC.
Krockow, Dieter: *See*—
Baumgartner, Werner; Krockow, Dieter; and Tihany, Jeno , 4,524,375, Cl. 357-30.000.
Kronos, Inc.: *See*—
Krakauer, Lawrence; and Bliss, Lawrence, 4,524,266, Cl. 235-377.000.
Krupp-Koppers GmbH: *See*—
Petrovic, Vladan, 4,523,906, Cl. 432-197.000.
Kuge, Toshio; Yokoyama, Hiroshi; Nogita, Shunsuke; Nakamura, Yoichi; and Muroi, Katsumi, to Hitachi, Ltd. Method of coal upgrading. 4,523,927, Cl. 44-1.00B.
Kuhls, Jurgen: *See*—
Walch, Axel; Seifried, Walter; Michel, Wolfgang; Kuhls, Jurgen; and Wildhardt, Juergen, 4,524,155, Cl. 521-64.000.
Kuhn, Hugo: *See*—
Pietzsch, Ludwig; Kauer, Harald; Duren, Johannes; and Kuhn, Hugo, 4,523,487, Cl. 74-378.000.
Kukes, Simon G.: *See*—
Banks, Robert L.; and Kukes, Simon G., 4,524,235, Cl. 585-646.000.
Kuklo, Thomas C., to United States of America, Energy. Apparatus and method for suppressing vibration and displacement of a bellows. 4,523,612, Cl. 138-30.000.
Kulprathipanja, Santi: *See*—
Cleary, Michael T.; Kulprathipanja, Santi; and Neuzil, Richard W., 4,524,029, Cl. 260-419.000.
Cleary, Michael T.; Kulprathipanja, Santi; and Neuzil, Richard W., 4,524,030, Cl. 260-419.000.

Kumakura, Mikio: *See*—
Sakano, Isao; Yokoyama, Tatsuro; Kajiya, Seitaro; Okazaki, Yutaka; Tokuda, Hiroshi; Kawazura, Hiroshi; Kumakura, Mikio; and Awaya, Akira, 4,524,147, Cl. 514-274.000.

Kummer Electronics B.V.: *See*—
Kummer, Jan, 4,523,545, Cl. 119-14.080.

Kummer, Jan, to Kummer Electronics B.V. Apparatus for removing a milking set of a milking machine, particularly for a cow-shed. 4,523,545, Cl. 119-14.080.

Kuno, Akira: *See*—
Matsumoto, Muneaki; Kuno, Akira; and Numata, Koji, 4,523,386, Cl. 33-357.000.

Kuno, Toshitaka; Moribe, Hiroshi; and Kamiya, Atsushi, to Kabushiki Kaisha Toyota Chuo Kenkyusho. Error detecting mechanism for servosystem. 4,524,313, Cl. 318-563.000.

Kuraray Co., Ltd.: *See*—
Genba, Tsuneo; Mizobe, Akio; and Okazaki, Masaki, 4,524,042, Cl. 264-211.000.

Kurioka, Shunichiro: *See*—
Yamazaki, Kaoru; Kurioka, Shunichiro; Sakata, Mitsuya; and Ogawa, Takahiro, 4,524,193, Cl. 526-79.000.

Kuroyanagi, Tomomitsu: *See*—
Shibata, Akira; Komatsu, Keiichi; Kuroyanagi, Tomomitsu; and Kojima, Noboru, 4,524,380, Cl. 358-316.000.

Kurple, Kenneth R.: *See*—
Alexander, Delores J.; Kurple, Kenneth R.; and Kordomenos, Panagiotis I., 4,524,192, Cl. 525-440.000.

Kutsuki, Tetsuo: *See*—
Isobe, Mitsuo; Kutsuki, Tetsuo; Yamaguchi, Namio; and Tanaka, Toshihide, 4,524,389, Cl. 358-188.000.

Kuznetz, Lawrence. Stretchable textile heat-exchange jacket. 4,523,594, Cl. 128-402.000.

Laba, Dennis; Margres, John J., Jr.; and Burkhardt, Kristin, to Armour Pharmaceutical Company. Antiperspirant/deodorant stick compositions. 4,524,062, Cl. 424-65.000.

Labadini, William M.: *See*—
Johnson, Stephen G.; and Labadini, William M., 4,523,795, Cl. 315-97.000.

Lacroix, Roger, to Ciba-Geigy Corporation. Process for the preparation of stable aqueous solutions of water-soluble reactive dyes by membrane separation. 4,523,924, Cl. 8-527.000.

Lacy, James W. Internal combustion engine. 4,523,549, Cl. 123-58.0BC.

Lama, William L.: *See*—
Hammond, Thomas J.; and Lama, William L., 4,524,289, Cl. 307-110.000.

Lamb, Steve R.; and Moore, Robert R. Anatomic fracture brace for the knee. 4,523,585, Cl. 128-80.00C.

Lamb-Weston, Inc.: *See*—
Julian, John C.; Sloan, Jerry L.; and Wheeler, Lee A., 4,523,503, Cl. 83-403.000.

Lambert, Joseph L.: *See*—
Bayne, Christopher J.; Lambert, Joseph L.; and Collyer, Graham E., 4,523,885, Cl. 414-156.000.

Lamberti, Vincent, to Lever Brothers Company. Powdered nonionic-based detergent compositions containing sodium acetate trihydrate. 4,524,013, Cl. 252-174.210.

Lamm, Foster P.: *See*—
Pike, Roscoe A.; and Lamm, Foster P., 4,524,176, Cl. 525-12.000.

LaMonica, Eugene R.: *See*—
Commette, Denis S.; and LaMonica, Eugene R., 4,523,696, Cl. 222-135.000.

Lang, Walter; Muller, Dieter; Muchel, Franz; Wanner, Roland; and Niesel, Peter, to Carl-Zeiss-Stiftung. Device for examining anterior sections of the eye. 4,523,821, Cl. 351-214.000.

Lang, Walter H.; and Hornschu, Joachim, to Carl-Zeiss-Stiftung, Heidenheim/Brenz. Ocular eyecups for wearers of glasses. 4,523,818, Cl. 350-579.000.

Lange International S.A.: *See*—
Gabrielli, Andrea, 4,523,392, Cl. 36-10.000.

Langton, Allan R.: *See*—
Faulconer, Mark; and Langton, Allan R., 4,523,914, Cl. 441-108.000.

Lantzsch, Reinhard: *See*—
Bonse, Gerhard; Lantzsch, Reinhard; Dorr, Henning; Kreiss, Wolfgang; Dickore, Karlfried; Ditgens, Klaus; and Kranz, Eckart, 4,524,205, Cl. 544-223.000.

Larkin, Mark E.; and Knox, Kenneth H., to Abbott Laboratories. Port structure for I.V. container. 4,523,691, Cl. 220-266.000.

Larner, Donald A., to Fluid Devices Limited. Pressure transducer. 4,523,476, Cl. 73-744.000.

Larsen, Leif U., to Husqvarna Aktiebolag. Looptaker mechanism. 4,523,534, Cl. 112-231.000.

Larson, David A.: *See*—
Sparks, Gregory E.; and Larson, David A., 4,523,494, Cl. 74-710.500.

Larson, Eric R.: *See*—
Osterhout, Ralph F.; Burr, John D.; and Larson, Eric R., 4,523,379, Cl. 30-151.000.

Larson, Francis W.: *See*—
Crocker, David R.; Stelling, Desi D.; and Larson, Francis W., 4,524,443, Cl. 370-112.000.

Larson, Michael E., to AMCA International Corp. Digitally-driven sine/cosine generator and modulator. 4,524,326, Cl. 328-14.000.

Last, Anthony E. W., to International Construction Equipment, Inc. Power hammer. 4,523,647, Cl. 173-133.000.

Latham, Peter A., to Opus, Inc. Squirrel-proof bird feeder. 4,523,546, Cl. 119-51.00R.

Latsch, Reinhard; Linder, Ernst; and Moser, Winfried, to Robert Bosch GmbH. Internal combustion engine. 4,523,559, Cl. 123-306.000.

Latter, Richard, to R & D Associates. Very high pressure apparatus for quenching. 4,523,748, Cl. 266-249.000.

Latvus, Vaino P., to Innovex Oy. Energy converter. 4,524,283, Cl. 290-1.00E.

Laub, Herman. Reusable tamper-proof container. 4,523,689, Cl. 215-232.000.

Laush, Frank I.; and Parker, Vernon L., to Scott Paper Company. Apparatus for conveying particulate material. 4,523,933, Cl. 55-97.000.

Lavash, Bruce W., to Procter & Gamble Company, The. Disposable bib having fibrous topsheet wherein mother's-bond zone is impregnated with bonding material. 4,523,334, Cl. 2-49.00R.

Laviana, Lawrence J., to M. H. Rhodes, Inc. Adjustable stop time switch. 4,524,250, Cl. 200-33.00R.

Lavoie, Gerard. Sink drain valve. 4,523,339, Cl. 4-191.000.

Law, Kock-Yee, to Xerox Corporation. Process for squaraine compositions from half esters of squaric acid. 4,524,219, Cl. 564-307.000.

Law, Kock-Yee, to Xerox Corporation. Process for the preparation of squaraine compositions in presence of amine component. 4,524,220, Cl. 564-307.000.

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Lee, Bang W. Roller bicycle. 4,523,770, Cl. 280-266.000.

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Lee, George A.; and Rains, Randall C., to Dow Chemical Company, The. Electron rich aromatics as cure promoters for radiation curable compositions. 4,523,982, Cl. 204-159.150.

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Lee, Paul P., to Biosound, Inc. Composite transducer structure. 4,523,471, Cl. 73-626.000.

Lefkowitz, Leonard R. Control interface. 4,524,348, Cl. 340-365.00R.

Lefkowitz, Stephen; Benenati, Salvatore; and Ickowski, Edward S., to GBC Closed Circuit TV Corp. Video and audio security system. 4,524,384, Cl. 358-108.000.

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Muller, Thomas; Lehner, Gunter; and Gugel, Georg, 4,523,470, Cl. 73-623.000.

Lehning, Heinz, to Motorola, Inc. Transition detector circuit. 4,524,291, Cl. 307-354.000.

Leibowitz, Martin N. Contoured apparel. 4,523,337, Cl. 2-237.000.

Leifeld, Ferdinand, to Trutzschler GmbH & Co. KG. Fiber lap producing apparatus with lap width varying device. 4,523,351, Cl. 19-105.000.

Lemcke, Ulrich: *See*—
Biber, Klaus; Grunvogel, Karl; Lemcke, Ulrich; Jakubowski, Heinz; and Schulz, Kurt, 4,523,732, Cl. 248-123.100.

Lemke, James U., to Eastman Kodak Company. Imaging apparatus. 4,524,390, Cl. 358-213.000.

Lemkin, Jack. Reversible security cover for stackable and nestable tote box. 4,523,692, Cl. 220-306.000.

Leng, Douglas E.: *See*—
Akers, James B., Jr.; Leng, Douglas E.; and Normand, Randall J., 4,524,189, Cl. 525-35.00G.

Le Page, Steven W. Three wheeled roller skate. 4,523,767, Cl. 280-11.190.

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Erme, Enn K.; Lepasaar, Tiit P.; Ummer, Jury E.; and Kink, Rein A., 4,523,845, Cl. 356-333.000.

Le Poole, Jan B. Charged particle beam exposure device incorporating beam splitting. 4,524,278, Cl. 250-398.000.

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Lesieur, Roger R., to United Technologies Corporation. Direct use of methanol fuel in a molten carbonate fuel cell. 4,524,113, Cl. 429-16.000.

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Nikkel, Ronnie D.; and L'Esperance, Paul M., 4,523,575, Cl. 126-418.000.

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Bjorklund, Gary C.; and Levenson, Marc D., 4,523,847, Cl. 356-349.000.

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Finch, Timothy D.; and Beavan, Stuart W., 4,524,014, Cl. 252-188.100.
Lamberti, Vincent, 4,524,013, Cl. 252-174.210.

Levine, Peter A., to RCA Corporation. Automatic adjustment of the amplitudes of plural-phase CCD clocking voltages. 4,524,450, Cl. 377-62.000.

Levitt, George, to Du Pont de Nemours, E. I., and Company. Herbicidal N-(heterocyclic)-aminocarbonyl thiophenesulfonamides. 4,523,943, Cl. 71-90.000.

Levko, Fred, to Illinois Tool Works Inc. Alternate action headlamp switch with mechanical logic. 4,524,248, Cl. 200-5.00B.

Lewis, Bernard L., to United States of America, Navy. Phase coded pulse expander-compressor. 4,524,362, Cl. 343-17.2PC.

Lewis, David, to Nu-Way Energy Limited. Burner for gaseous fuels. 4,523,905, Cl. 431-351.000.

Lhenry, Bernard; and Roustan, Max, to Creusot-Loire. Centrifugal compressor. 4,523,896, Cl. 417-244.000.

Librecht, Freddy M.: *See*—
De Cock, Etienne M.; De Schamphelaere, Lucien A.; Librecht, Freddy M.; and Van Peteghem, Willy F., 4,524,372, Cl. 346-160.000.

Liebscher, Anton: *See*—
Auberry, Horace; Liebscher, Anton; and Oberg, Sven, 4,523,346, Cl. 12-133.00R.

Life Products, Inc.: *See*—
Dolsky, Thomas P., 4,523,588, Cl. 128-201.250.

Lifeline Systems, Inc.: *See*—
Shapiro, L. Dennis, 4,524,243, Cl. 179-5.00R.

Lill, Melvin H.: *See*—
Titsworth, Raymond; and Lill, Melvin H., 4,523,844, Cl. 356-152.000.

Lin, Shiow C., to W. R. Grace & Co. Reactive plastisol dispersion. 4,523,983, Cl. 204-159.150.

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Fuchs, Uwe, 4,524,139, Cl. 502-22.000.

Linden, Gerbert: *See*—
Mengel, Rudolf; Schroder, Ludwig; Stransky, Werner; Linden, Gerbert; Schneider, Gerhart; and Lust, Sigmund, 4,523,945, Cl. 71-92.000.

Lindenberger, W. Stewart; Poteat, Tommy L.; and West, James E., to AT&T Bell Laboratories. Integrated electroacoustic transducer with built-in bias. 4,524,247, Cl. 179-111.00R.

Linder, Ernst: *See*—
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Lindh, Kjell E.; and Sundin, Kjell H. Ankle ligament protective device. 4,523,394, Cl. 36-89.000.

Lindstrom, Robert; and Allen, Robert J., to Prototech Company. Self-supporting catalytic sleeve formed of interwoven loosely packed multi-fiber strands for receiving air-combustible gas mixtures for flameless catalytic combustion along the sleeve. 4,524,094, Cl. 428-36.000.

Liot, Roger, to Roger Liot, S.A. Highly concentrated egg white or salted whole egg product and its method of preparation. 4,524,082, Cl. 426-312.000.

Liot, Roger, to Roger Liot, S.A. Reserved liquid eggs and method of preparation. 4,524,083, Cl. 426-330.100.

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Eberling, Igor L.; Tereschenko, Lev A.; Nikolaev, Nikolai I.; Yakovlev, Arian M.; Kovalenko, Vitaly I.; Lipatov, Nikolai K.; Tatevosian, Ruben A.; and Titov, Mikhail Y., 4,524,319, Cl. 324-65.00R.

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Littlefield, Bruce G., to Redcom Laboratories Inc. Ring trip detection system. 4,524,245, Cl. 179-18.0HB.

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Livni, Eli: *See*—
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Luly, Matthew H.; Lockyer, George D., Jr.; Eibeck, Richard E.; and Gaynor, Joseph, 4,524,119, Cl. 430-108.000.

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Gockel, Karl-Heinz; Anhauser, Dieter; Hoffmann, Hans R.; and Reinhold, Karl-Heinz, 4,524,095, Cl. 428-43.000.

Lohrey, Cecil R.: *See*—
Fullenkamp, Eugene H.; and Lohrey, Cecil R., 4,523,683, Cl. 211-190.000.

Lok, Kar P.; and Ober, Christopher K., to Xerox Corporation. Stable polymeric dispersion and methods for making. 4,524,199, Cl. 527-313.000.

Long, David J.; and Oxenrider, Bryce C., to Allied Corporation. Fluorinated esters of 3,3,4,4-benzophenone tetracarboxylic dianhydride. 4,524,215, Cl. 560-052.000.

Lord, Richard G., to Carrier Corporation. Method and apparatus for controlling a refrigerant expansion valve in a refrigeration system. 4,523,435, Cl. 62-212.000.

Lord, Richard G.: *See*—
Schedel, John W.; and Lord, Richard G., 4,523,436, Cl. 62-222.000.

L'Oreal: *See*—
Sebag, Henri; and Vanlerberghe, Guy, 4,523,921, Cl. 8-405.000.

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Breustedt, Alfred; Taschner, Heinz; Korf, Rainer; and Lorenz, Renate, 4,523,912, Cl. 433-202.000.

Loughridge, Frederick A.: *See*—
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Louis G. Freeman Company, The: *See*—
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Lower, Ralph C.; and Murray, Gary P., to Robinair Division. Two stage vacuum pump. 4,523,897, Cl. 417-244.000.

LQ Corporation: *See*—
Martin, Samuel W., 4,523,869, Cl. 400-629.000.

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Lubin, Barry T.; and Thompson, James P., to Combustion Engineering, Inc. Acoustic monitoring of tube vibration. 4,523,466, Cl. 73-579.000.

Lucas Industries public limited company: *See*—
Moore, John H.; and Harvey, Ian J., 4,523,563, Cl. 123-359.000.
Richmond, Anthony J. C., 4,523,365, Cl. 29-527.400.
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Lucas, Victor A., to Caterpillar Tractor Co. High strength bucket. 4,523,397, Cl. 37-118.00R.

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Stock, Rodney D.; and Newman, Gary H., 4,524,240, Cl. 174-68.500.

Lucki, Stanley J.: *See*—
Chester, Arthur W.; Garwood, William E.; Lucki, Stanley J.; and Tabak, Samuel A., 4,524,232, Cl. 585-517.000.

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Luly, Matthew H.; Lockyer, George D., Jr.; Eibeck, Richard E.; and Gaynor, Joseph, to Allied Corporation. Electrophotographic carriers incorporating fluorinated carbon and process of using same. 4,524,119, Cl. 430-108.000.

Lunden, Charles K., Jr. Ladder attachment for use by painters. 4,523,733, Cl. 248-210.000.

Lust, Sigmund: *See*—
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Lynch, Henry W.: *See*—
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Lyons, James E.: *See*—
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M.A.N. Maschinenfabrik Augsburg-Nurnberg Aktiengesellschaft: *See*—
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Fischer, Hermann, 4,523,522, Cl. 101-219.000.

M. H. Rhodes, Inc.: *See*—
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M & W Gear Company: *See*—
Cornelius, Erwin D., 4,523,690, Cl. 220-262.000.

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Soubry, Garry V.; and MacFarlane, James L., 4,523,664, Cl. 182-233.000.

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Mills, Marvin A., Jr.; Moyer, William C.; MacGregor, Douglas B.; and Zolnowsky, John E., 4,524,415, Cl. 364-200.000.

Macovski, Albert. Blood vessel projection imaging system using nuclear magnetic resonance. 4,523,596, Cl. 128-653.000.

Madonia, Ciro. Support stake for plants. 4,523,405, Cl. 47-47.000.

Maeda, Hirofumi; Nakamura, Kyoichi; and Hatamoto, Toshihiro, to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha. Pre-expanding process and apparatus for the same. 4,524,154, Cl. 521-58.000.

Maeda, Nobuhisa; Sakairi, Tadashi; and Wakahata, Tamotsu, to Matsushita Electric Industrial Co., Ltd. Directly moldable resin compositions for composite plastics. 4,524,160, Cl. 523-200.000.

Maeda, Takumi: *See*—
Shono, Toshiyuki; Kimura, Keiichi; and Maeda, Takumi, 4,523,994, Cl. 210-500.200.

Maekawa, Kouji; Kato, Mamoru; Nakagama, Syoji; and Sano, Yumiko, to Mita Industrial Co., Ltd. Electrophotographic method for the formation of two-colored images. 4,524,117, Cl. 430-44.000.

Magee, Walter L., Jr.: *See*—
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Magnetic Technologies Corp.: *See*—
Fagen, Ben W., Jr.; and Cappon, Douglas W., 4,524,088, Cl. 427-10.000.
Magnusson, Stig E.: *See*—
Simmons, Nathaniel; Puccini, Sergio E.; Magnusson, Stig E.; and Parikh, Kamal I., 4,524,441, Cl. 370-63.000.
Simmons, Nathaniel; Puccini, Sergio E.; Magnusson, Stig E.; and Parikh, Kanal I., 4,524,442, Cl. 370-63.000.
Magoon, Inder K., to General Electric Company. In-line annular piston fixed bolt regenerative liquid propellant gun. 4,523,507, Cl. 89-7.000.
Magoon, Inder K.: *See*—
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Mahan, Douglas P. Microwave treating mechanism. 4,523,387, Cl. 34-1.000.
Mahdjuri Sabet, Faramarz. Solar radiation collector. 4,523,578, Cl. 126-443.000.
Maheras, George; and Hayworth, Hubert O., to NCR Corporation. Precision IC alignment keys and method. 4,523,851, Cl. 356-399.000.
Maki, Ray. Battery shield. 4,523,658, Cl. 180-68.500.
Makio, Tatsumi: *See*—
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Makovich, Joseph J. Method and apparatus for injecting medication into a body through a tooth. 4,523,910, Cl. 433-80.000.
Maliszewski, Theodore V.; and Kohler, David E., to Combustion Engineering, Inc. Bowl mill with primary classifier assembly. 4,523,721, Cl. 241-61.000.
Maly, Neil A.: *See*—
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Manabe, Hofumi: *See*—
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Manzoni, Stephane, to Societe Manzoni-Bouchot. Device for mounting a rearview mirror casing on a support member. 4,523,736, Cl. 248-483.000.
Marc, Michel. Method and apparatus for forming a flexible thermoplastic resin foam article using an RF field. 4,524,037, Cl. 264-26.000.
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Marchetti, Joseph R.; and Sanjana, Zal N., to Westinghouse Electric Corp. Toughened thermoset laminates. 4,524,107, Cl. 428-413.000.
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Marinace, John C.; and McGibbon, Ralph C., to International Business Machines Corporation. Adhesion of a photoresist to a substrate. 4,524,126, Cl. 430-311.000.
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Marlor, Richard C.: *See*—
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Marshak, Michael S. Audio mixer/pre-amplifier. 4,524,452, Cl. 381-28.000.
Marshall, Glenn E. Load-absorbing mount for electromagnets. 4,523,782, Cl. 294-65.500.
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Martin, Hans, to Emhart Industries, Inc. Apparatus for reading a line marking fixed to a carrier. 4,524,270, Cl. 235-494.000.
Martin, Jack, to Brentini, Attilio. Key-holder. 4,523,442, Cl. 70-459.000.
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Martin, Marshal H., to Indicator Controls Corp. Solid state regulated power supply system for cold cathode luminescent tube. 4,524,305, Cl. 315-221.000.
Martin, Merritt W., to Owens-Illinois, Inc. Blow molding apparatus. 4,523,904, Cl. 425-539.000.
Martin, Patrick H.: *See*—
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Martin, Paul H.; and Martin, John C., to Diesel Equipment Limited. Hydraulic wobble pumps. 4,523,898, Cl. 417-269.000.
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Masuda, Kenji, to Daikin Kogyo Co., Ltd. Fluid flow control system. 4,523,430, Cl. 60-420.000.
Masumoto, Tsuyoshi; Inoue, Akihisa; and Hagiwara, Michiaki, to Masumoto, Tsuyoshi; and Unitika, Limited. Amorphous metal filaments and process for producing the same. 4,523,626, Cl. 164-463.000.
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May, Denis R. W., to J. E. Hanger & Company Limited. Demountable joint. 4,523,338, Cl. 3-21.000.
Mayer, Robert E.; Magoon, Inder K.; and West, Herbert J., to General Electric Company. In-line annular piston fixed bolt regenerative liquid propellant gun. 4,523,508, Cl. 89-7.000.
McCain, James H., to Union Carbide Corporation. Process for oxydehydrogenation of ethane to ethylene. 4,524,236, Cl. 585-658.000.
McCarthy, Richard A., to Aer-Overly Corporation. Peripheral exhaust system for high velocity dryer. 4,523,390, Cl. 34-115.000.
McClelland, John F., to Iowa State University Research Foundation, Inc. Semi-transparent solar energy thermal storage device. 4,523,577, Cl. 126-430.000.
McClure, Gerald B.: *See*—
Sehnert, Steven D.; McClure, Gerald B.; and McPhee, William A., 4,523,650, Cl. 175-4.560.
McConnell, Dale K. Door light. 4,523,408, Cl. 49-502.000.
McCool, George W., to Sherwood Medical Company. Tube and fitting assembly and method of making same. 4,523,968, Cl. 156-73.500.
McCormick, Ronald W.: *See*—
Arndt, Kim E.; McCormick, Ronald W.; and Rogers, Richard B., 4,523,940, Cl. 71-11.000.
McCoy, David R.; and Naylor, Carter G., to Texaco Inc. Bicyclodecyl ether sulfonates and compositions containing the same. 4,524,023, Cl. 252-548.000.
McDougal, John R. Process for the manufacture of products from reinforced polyester resins. 4,524,043, Cl. 264-320.000.
McFaddin, James: *See*—
Glodo, David O.; and McFaddin, James, 4,524,420, Cl. 364-497.000.
McFarland, Robert W.: *See*—
Beck, Marlin E.; and McFarland, Robert W., 4,523,735, Cl. 248-476.000.
McFiggans, Robert B.: *See*—
Eckert, Alton B.; and McFiggans, Robert B., 4,524,426, Cl. 364-900.000.
McGibbon, Ralph C.: *See*—
Marinace, John C.; and McGibbon, Ralph C., 4,524,126, Cl. 430-311.000.
McGivern, James P.: *See*—
Sun, Shan C.; and McGivern, James P., 4,524,446, Cl. 371-22.000.
McGlothen, Jody R., to Dresser Industries, Inc. Well perforating and completion apparatus and associated method. 4,523,643, Cl. 166-297.000.
McGraw-Edison Company: *See*—
Gaia, Aldino J., 4,524,344, Cl. 337-159.000.
McHugh, Larry F.; and Barchers, Daniel E., to Amax Inc. Roasting of molybdenite concentrates containing flotation oils. 4,523,948, Cl. 75-7.000.
McKay, Gretchen L.: *See*—
Cosper, David R.; and McKay, Gretchen L., 4,523,932, Cl. 55-85.000.
McKee, Gerald D.: *See*—
Draper, David L.; and McKee, Gerald D., 4,523,785, Cl. 296-224.000.
McKenna, George T. Coat pack. 4,523,703, Cl. 224-224.000.
McKinney, David A. Vehicle air conditioning and heating system. 4,523,631, Cl. 165-43.000.
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Goss, Willis C.; Nelson, Mark D.; and McLauchlan, John M., 4,523,810, Cl. 350-320.000.
McLaughlin, Jon R. Modular construction system. 4,523,418, Cl. 52-284.000.
McMurtry, David R.: *See*—
Rogers, Michael J.; and McMurtry, David R., 4,523,383, Cl. 33-558.000.
McPhee, William A.: *See*—
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McPherson, James O.: *See*—
Efron, Edward; McPherson, James O.; and Kim, Young B., 4,524,444, Cl. 371-24.000.
Mead Johnson & Company: *See*—
New, James S.; and Yevich, Joseph P., 4,524,206, Cl. 544-230.000.
Medical Engineering Corporation: *See*—
Yachia, Daniel; and Lynch, Henry W., 4,523,584, Cl. 128-79.000.
Medtronic, Inc.: *See*—
Rueter, John C., 4,523,593, Cl. 128-419.0PG.
Meeker, C. Irving: *See*—
Roth, Wilfred; and Meeker, C. Irving, 4,523,590, Cl. 128-325.000.
Meijer, Roelf J.; and Ziph, Benjamin, to Stirling Thermal Motors, Inc. Heat pipe. 4,523,636, Cl. 165-104.260.
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Belanger, Richard W.; and Melendy, Peter S., 4,523,705, Cl. 226-127.000.
Melman, Paul; and Carlsen, W. John, to GTE Laboratories Incorporated. Optical test set-up for expanded beam connector. 4,523,843, Cl. 356-127.000.
Melrose Displays, Inc.: *See*—
Cohen, Melvin; and Duyne, Fred V., 4,523,722, Cl. 211-175.000.
Mengel, Ronald E., to Oscar Mayer Foods Corporation. Slicer feed mechanism. 4,523,501, Cl. 83-42.000.
Mengel, Rudolf; Schroder, Ludwig; Stransky, Werner; Linden, Gerbert; Schneider, Gerhart; and Lust, Sigmund, to Celamerck, Gesellschaft mit beschrankter Haftung & Co. KG. 2-Amino-6-(cyclopropylmethyl-amino)-pyrimidines useful as herbicides and microbicides. 4,523,945, Cl. 71-92.000.
Menzel, Dietrich: *See*—
Schmiedgen, Hans; Bernhardt, Siegfried; Strobl, Otto; and Menzel, Dietrich, 4,523,350, Cl. 19-98.000.
Merkel, Paul B.: *See*—
Weber, Lynda D.; Merkel, Paul B.; and Warren, Harold C., III, 4,524,122, Cl. 430-223.000.
Merkli, Peter, to GRAPHA-Holding AG. Apparatus for convoluting sheets of paper on a core. 4,523,751, Cl. 270-60.000.
Merrell Dow Pharmaceuticals Inc.: *See*—
Metcalf, Brian W.; and Lippert, Bruce J., 4,524,076, Cl. 514-472.000.
Merritt, George: *See*—
Raftis, Spiros G.; and Merritt, George, 4,523,738, Cl. 251-4.000.
Mesny, Jacques A.: *See*—
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Metamora Products Corp.: *See*—
Schiedegger, Charles E.; and Elfes, Vean, 4,524,096, Cl. 428-68.000.
Metcalf, Brian W.; and Lippert, Bruce J., to Merrell Dow Pharmaceuticals Inc. Novel γ-aminobutyric acid transaminase inhibitors. 4,524,076, Cl. 514-472.000.
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Lodge, Daniel A.; and Wheeler, Donald D., 4,523,366, Cl. 29-564.600.
Meyer, Cyril G. Electrically heated sewer vent line defroster. 4,524,262, Cl. 219-213.000.
Meyer, Rudolf: *See*—
Himmelmann, Wolfgang; Sackmann, Gunter; and Meyer, Rudolf, 4,524,131, Cl. 430-523.000.
Meyer, Wilfred C.; and Jakubowski, James J., to Dow Chemical Company, The. Carrier particle for the froth flotation of fine ores. 4,523,991, Cl. 209-166.000.
Meyer, Willy: *See*—
Fory, Werner; Gass, Karl; Meyer, Willy; and Schurter, Rolf, 4,523,944, Cl. 71-92.000.
Meza, Peter J., to Harris Corporation. SLIC II—common-mode current rejection. 4,524,246, Cl. 179-18.0FA.
Mezger, Hans; and Konneker, Reinhard, to Harley-Davidson Motor Co., Inc. Reciprocating internal combustion engine with a wet cylinder sleeve inserted into a cylinder crank housing. 4,523,555, Cl. 123-193.00C.
Miale, Joseph N.: *See*—
Chang, Clarence D.; and Miale, Joseph N., 4,524,140, Cl. 502-61.000.
Michel, Wolfgang: *See*—
Walch, Axel; Seifried, Walter; Michel, Wolfgang; Kuhls, Jurgen; and Wildhardt, Juergen, 4,524,155, Cl. 521-64.000.
Michigan Consolidated Gas Company: *See*—
Engel, Larry J.; and Turko, John W., 4,523,548, Cl. 123-1.00A.
Micron Kiki Co., Ltd.: *See*—
Ikenoue, Tsuneo; Liu, Shin-yng; Arai, Naoki; and Umemoto, Shuichi, 4,524,413, Cl. 363-127.000.
Miki, Shinji; Nishio, Toyokazu; Matsuyama, Shinzo; and Yamazaki, Shinichi, to Takiron Co., Ltd. Plastic underdrainage tube. 4,523,874, Cl. 405-43.000.
Mikropul Corporation: *See*—
Duyckinck, Robert W., 4,523,990, Cl. 209-138.000.
Miles Laboratories, Inc.: *See*—
Bauer, Robert, 4,523,852, Cl. 356-421.000.
Tyhach, Richard J., 4,524,133, Cl. 435-14.000.
Millard, Leff. Precision, dynamic low voltage measurement system. 4,524,317, Cl. 323-224.000.
Millauer, Hans; Siegemund, Gunter; and Schwertfeger, Werner, to Hoechst Aktiengesellschaft. Fluorosulfatoperfluorocarbonyl compounds. 4,524,031, Cl. 260-456.00F.
Miller, Ann S., executrix: *See*—
Miller, Charles G., deceased; Stephens, James B.; and Youngberg, Charles, 4,523,808, Cl. 350-146.000.
Miller, Charles G., deceased (by Miller, Ann S., executrix); Stephens, James B.; and Youngberg, Charles, to Wilson Sales Company, Inc. Welding helmets with auxiliary optical vision systems. 4,523,808, Cl. 350-146.000.
Miller, Dorothy W.: *See*—
Miller, Fred L. B., deceased, 4,523,407, Cl. 49-465.000.
Miller, Dorothy W., personal representative: *See*—
Miller, Fred L. B., deceased, 4,523,407, Cl. 49-465.000.
Miller, Fred L. B., deceased (by Miller, Dorothy W., personal representative), to Miller, Dorothy W. Hatch cover. 4,523,407, Cl. 49-465.000.
Miller, Ivan O., to Shafco Industries Inc. Rotary ball valve assembly. 4,523,608, Cl. 137-315.000.
Miller, Kenneth L.: *See*—
Chalmers, Brian D.; Ruxton, David S.; and Miller, Kenneth L., 4,524,397, Cl. 360-77.000.
Miller, Richard J. L.: *See*—
Clayfield, Eric J.; Dixon, Arnold G.; and Miller, Richard J. L., 4,524,000, Cl. 210-649.000.
Miller, Richard L.; and Estela, Carlos, to General Electric Environmental Services, Inc. Fabric filter system with improved gas bypass means for removing particulate matter from gases. 4,523,931, Cl. 55-80.000.
Miller, Richard W., to Foxboro Company, The. Planar-measuring vortex-shedding mass flowmeter. 4,523,477, Cl. 73-861.020.
Milliken Research Corporation: *See*—
Berczi, Charles N.; and Hall, Karen, 4,524,170, Cl. 524-371.000.

Mills, Marvin A., Jr.; Moyer, William C.; MacGregor, Douglas B.; and Zolnowsky, John E., to Motorola, Inc. Virtual machine data processor. 4,524,415, Cl. 364-200.000.

Minami, Setsuo: *See—*
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Minamikawa, Yoshihisa: *See—*
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Minchev, Pavel M.; Hristov, Hristomir D.; Balinov, Stoimen S.; Angelov, Mihail H.; and Yordanov, Nikolay V., to Institute Po Metaloznanie I Technologia Na Metalite. Apparatus for soldering the winding to the commutator of an electric machine. 4,523,708, Cl. 228-37.000.

Mine Roof Support Systems, Inc.: *See—*
Ringe, Thomas, 4,523,881, Cl. 405-259.000.

Minera, Salvador A. Candle holder combination. 4,524,408, Cl. 362-163.000.

Minigrip, Inc.: *See—*
Ausnit, Steven, 4,523,918, Cl. 493-198.000.

Minnesota Mining and Manufacturing Company: *See—*
Adam, Randall E.; and Schultz, William J., 4,524,181, Cl. 525-107.000.
Engel, Michael R., 4,524,087, Cl. 427-2.000.
Freerks, Conrad T., 4,523,411, Cl. 51-170.0MT.
Heilmann, Steven M.; Krepski, Larry R.; and Rasmussen, Jerald K., 4,524,221, Cl. 568-322.000.
Morioka, Eddie T., 4,523,727, Cl. 242-192.000.
Nepper, Robert F.; Solyntjes, Alan J.; and Abrahamson, Carl W., 4,523,836, Cl. 355-16.000.

Minolta Camera Kabushiki Kaisha: *See—*
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Nishioka, Nobuaki; Makio, Tatsumi; and Ito, Katsutsune, 4,524,370, Cl. 346-155.000.
Sawa, Seiji; and Kita, Nobuyuki, 4,523,597, Cl. 128-652.000.

Minoura, Kazuo: *See—*
Baba, Takeshi; Nose, Noriyuki; Yoshikawa, Hideo; Minoura, Kazuo; Hasu, Akinori; Minami, Setsuo; and Matsuoka, Kazuhiko, 4,523,801, Cl. 350-6.800.

Misaki, Susumu; Ishii, Sadamu; and Suefuji, Masahiro, to Daikin Kogyo Co., Ltd. Direct fluorination of etherified or unetherified hydroxy group bearing aromatic compounds. 4,524,032, Cl. 260-465.00F.

Mita Industrial Co., Ltd.: *See—*
Hisajima, Masahiko; Kimura, Hiroshi; Shigemura, Yutaka; Yada, Isao; Irie, Yoichiro; Morimoto, Kiyoshi; and Nagashima, Takashi, 4,523,754, Cl. 271-264.000.
Maekawa, Kouji; Kato, Mamoru; Nakagama, Syoji; and Sano, Yumiko, 4,524,117, Cl. 430-44.000.
Nakatani, Kaname; Miyakawa, Nobuhiro; Higashiguchi, Teruaki; and Edo, Tomomi, 4,524,118, Cl. 430-56.000.

Mitchell, Alexander M.: *See—*
Jablway, Ali N.; and Mitchell, Alexander M., 4,524,321, Cl. 324-66.000.

Mitchell, Randall M.; and Armstrong, John T., Jr., to Caterpillar Tractor Co. Hydrostatic vehicle control. 4,523,892, Cl. 417-34.000.

Mitel Corporation: *See—*
Groves, Christopher K.; Duncan, Kevin; and Darwall, Edward C. D., 4,523,975, Cl. 156-643.000.

Mitsubishi Denki K.K.: *See—*
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Mitsubishi Denki Kabushiki Kaisha: *See—*
Araya, Shinji; and Tsuji, Shintaro, 4,524,418, Cl. 364-436.000.
Iwata, Toshio, 4,523,567, Cl. 123-425.000.
Matsumoto, Akio; and Yokota, Mitsuyoshi, 4,524,312, Cl. 318-481.000.
Nishimura, Tadashi, 4,523,962, Cl. 148-1.500.
Shima, Ichiji; Yoshibayashi, Shigeru; and Taniguti, Ryosuke, 4,524,355, Cl. 340-870.130.
Tanaka, Hideharu; Sekiya, Mutsuo; and Uchikawa, Fusaoki, 4,523,662, Cl. 181-249.000.
Tsuji, Shintaro, 4,523,665, Cl. 187-29.00R.
Yokota, Mitsuyoshi; and Matsumoto, Akio, 4,524,311, Cl. 318-481.000.

Mitsubishi Denki Kanushiki Kaisha: *See—*
Kiyokawa, Morio, 4,524,414, Cl. 364-171.000.

Mitsubishi Gas Chemical Company, Inc.: *See—*
Takahashi, Hideyuki; Komatsu, Toshio; and Inoue, Yoshiaki, 4,524,015, Cl. 252-188.280.

Mitsui Toatsu Chemicals, Incorporated: *See—*
Sakano, Isao; Yokoyama, Tatsuro; Kajiya, Seitaro; Okazaki, Yutaka; Tokuda, Hiroshi; Kawazura, Hiroshi; Kumakura, Mikio; and Awaya, Akira, 4,524,147, Cl. 514-274.000.

Miyakawa, Nobuhiro: *See—*
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Miyamoto, Kazuaki: *See—*
Nishizaki, Tomoyoshi; Miyamoto, Minoru; Miyamoto, Kazuaki; Yoshida, Ken; Yamaji, Katsuhiko; and Nakata, Yasushi, 4,523,635, Cl. 165-104.120.

Miyamoto, Minoru: *See—*
Nishizaki, Tomoyoshi; Miyamoto, Minoru; Miyamoto, Kazuaki; Yoshida, Ken; Yamaji, Katsuhiko; and Nakata, Yasushi, 4,523,635, Cl. 165-104.120.

Miyata, Hiroyasu; and Ito, Kazuhiko, to Alps Electric Co., Ltd. Pressure-sensitive element. 4,524,256, Cl. 200-86.00R.

Miyazaki, Naoki: *See—*
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Mizobe, Akio: *See—*
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Mizuno, Toru: *See—*
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Mizutani, Shinichi; and Ajiki, Harumi, to Toyota Jidosha Kabushiki Kaisha. Bush mounting equipment with lubricating oil applying mechanism. 4,523,363, Cl. 29-235.000.

Moban B.V.: *See—*
Schimmelpennink, Laurens M. H.; and Spaanenburg, Lambertus, 4,524,288, Cl. 307-40.000.

Mobil Oil Corporation: *See—*
Chang, Clarence D.; and Miale, Joseph N., 4,524,140, Cl. 502-61.000.
Chester, Arthur W.; Garwood, William E.; Lucki, Stanley J.; and Tabak, Samuel A., 4,524,232, Cl. 585-517.000.
Chibnik, Sheldon, 4,524,007, Cl. 252-56.00R.
Fowles, Patrick E.; and Yan, Tsoung-Yuan, 4,524,227, Cl. 585-408.000.
Fowles, Patrick E.; and Yan, Tsoung-Yuan, 4,524,228, Cl. 585-408.000.
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Horodysky, Andrew G., 4,524,004, Cl. 252-32.70E.
Horodysky, Andrew G., 4,524,005, Cl. 252-49.600.
Murray, James G., 4,524,184, Cl. 525-314.000.
Penick, Joe E., 4,523,987, Cl. 208-157.000.
Venkatesan, Valadi N., 4,523,642, Cl. 166-272.000.

Moffitt, Max L.: *See—*
Allen, Edwin M.; Foust, Eugene C.; Sievert, Steven A.; Fitzgerald, William C.; and Moffitt, Max L., 4,523,842, Cl. 356-124.000.

Mogi, Mamoru: *See—*
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Momemers, Wilhelmus M. A. Key keeper. 4,523,443, Cl. 70-459.000.

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Ruest, Dennis A.; Takano, Masaharu; and Wolf, Lawrence R., 4,524,077, Cl. 514-557.000.

Montech Systems Incorporated: *See—*
Strickler, Steven E.; Simmons, Jerry C.; Golladay, James; and Goldstein, Andrew D., 4,523,460, Cl. 73-200.000.

Montedison S.p.A.: *See—*
Paffoni, Camillo; Carlini, Filippo M.; Bottaccio, Giorgio; and Osti, Alberto, 4,523,953, Cl. 106-23.000.

Moore, Boyd B. Method of and apparatus for moving reeled material into and retrieving it from the upper end of a well bore in the earth's surface. 4,523,645, Cl. 166-385.000.

Moore, Donald E.; and Olsen, David W., to FMC Corporation. Anti-two block system. 4,523,686, Cl. 212-152.000.

Moore, Fergus E.: *See—*
Billingsley, James D.; and Moore, Fergus E., 4,524,385, Cl. 358-113.000.

Moore, George G. I., to Riker Laboratories, Inc. 2,6-Di(t-butyl)-4-hydroxy-4-pyridyl-2,5-cyclohexadien-1-one intermediates. 4,524,210, Cl. 546-340.000.

Moore, John H.; and Harvey, Ian J., to Lucas Industries public limited company. Electronic control system for a fuel pump. 4,523,563, Cl. 123-359.000.

Moore, Robert A.; and Karisch, Edward P., to Halliburton Company. Dual guard type resistivity measuring apparatus. 4,524,325, Cl. 324-375.000.

Moore, Robert R.: *See—*
Lamb, Steve R.; and Moore, Robert R., 4,523,585, Cl. 128-80.00C.

Morche, Klaus: *See—*
Bauer, Armin; Ehrend, Helfried; Morche, Klaus; Nutzel, Karl; and Sauerbier, Michael, 4,524,182, Cl. 525-120.000.

Moreau, Claude: *See—*
Clement, Gilles; Francois, Daniel; Marchal, Paul; and Moreau, Claude, 4,523,884, Cl. 414-8.000.

Morgan, Jack B. Apparatus and method for monitoring remote security zones. 4,524,354, Cl. 340-825.360.

Morgan, Robert K.; and Yaeger, John R., to Raychem Corporation. Self-regulated actuator. 4,524,343, Cl. 337-140.000.

Moriarty, Michael P., to Rockwell International Corporation. Combustion method. 4,523,532, Cl. 110-347.000.

Moribe, Hiroshi: *See—*
Kuno, Toshitaka; Moribe, Hiroshi; and Kamiya, Atsushi, 4,524,313, Cl. 318-563.000.

Moriguchi, Haruhiko: *See—*
Inui, Toshiharu; and Moriguchi, Haruhiko, 4,524,368, Cl. 346-76.0PH.

Morimoto, Kiyoshi: *See—*
Hisajima, Masahiko; Kimura, Hiroshi; Shigemura, Yutaka; Yada, Isao; Irie, Yoichiro; Morimoto, Kiyoshi; and Nagashima, Takashi, 4,523,754, Cl. 271-264.000.

Morioka, Eddie T., to Minnesota Mining and Manufacturing Company. Non-oscillating spool for belt driven cartridge. 4,523,727, Cl. 242-192.000.

Morita, Akitaka: *See—*
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Morita Fire Pump Mfg. Co., Ltd.: *See*—
Terayama, Fusaji; Kohzai, Tetsuo; and Murai, Naoyuki, 4,523,685, Cl. 212-247.000.
Moriyama, Yukinori; and Ozaki, Tsukasa, to Teijin Seiki Company Limited. Grip-feed machines used with stamping and bending machines. 4,523,449, Cl. 72-421.000.
Mortellite, Robert M., to Clopay Corporation. Window shade clutch assembly. 4,523,620, Cl. 160-315.000.
Mosbach, Klaus H.: *See*—
Hagerdal, Barbel G. R.; and Mosbach, Klaus H., 4,524,137, Cl. 435-178.000.
Moser, Winfried: *See*—
Latsch, Reinhard; Linder, Ernst; and Moser, Winfried, 4,523,559, Cl. 123-306.000.
Moss, Keith G.; Smith, Peter J.; and Woolhouse, Robin A., to Imperial Chemical Industries, PLC. Treatment of ion-exchange membrane. 4,523,984, Cl. 204-296.000.
Mostmans, Joseph H.: *See*—
Heeres, Jan; Backx, Leo J. J.; and Mostmans, Joseph H., 4,524,110, Cl. 428-537.100.
Motor Wheel Corporation: *See*—
Murray, Scott L., 4,523,666, Cl. 188-218.0XL.
Motorola, Inc.: *See*—
Balda, Raymond J.; Bukhman, Yefim; and Goodner, Willis R., 4,523,372, Cl. 29-590.000.
Bukhman, Yefim, 4,523,976, Cl. 156-643.000.
Gay, Michael J., 4,524,332, Cl. 330-294.000.
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Mills, Marvin A., Jr.; Moyer, William C.; MacGregor, Douglas B.; and Zolnowsky, John E., 4,524,415, Cl. 364-200.000.
Motosugi, Katsuhiko; and Sasaki, Yoshio, to Toyota Jidosha Kogyo Kabushiki Kaisha. Intake device of an internal combustion engine. 4,523,560, Cl. 123-308.000.
Moyer, William C.: *See*—
Mills, Marvin A., Jr.; Moyer, William C.; MacGregor, Douglas B.; and Zolnowsky, John E., 4,524,415, Cl. 364-200.000.
Muchel, Franz: *See*—
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Mueller Co.: *See*—
Daghe, Joseph L.; Sands, Robert E.; and Humes, Dennis W., 4,523,607, Cl. 137-218.000.
Muggli, Jurg; and Gruber, Peter, to Cerberus AG. Optical smoke detector with sensitivity adjustment. 4,524,281, Cl. 250-574.000.
Mughal, Ahmed S.; and Holmes, David S., to John Wyeth & Brother Limited. Slow release pharmaceutical composition. 4,524,060, Cl. 424-19.000.
Mukainakano, Shinichi; Hattori, Tadashi; Nishida, Minoru; Mizuno, Toru; and Goto, Tukasa, to Nippondenso Co., Ltd.; and Nippon Soken, Inc. Ignition system for engine. 4,523,552, Cl. 123-143.00B.
Muller, Dieter: *See*—
Lang, Walter; Muller, Dieter; Muchel, Franz; Wanner, Roland; and Niesel, Peter, 4,523,821, Cl. 351-214.000.
Muller, Roger, to Elermetal. Machine for the deep slitting of the periphery of non planar discs used for providing wheels having a pneumatic tire. 4,523,446, Cl. 72-71.000.
Muller, Thomas; Lehner, Gunter; and Gugel, Georg, to Kraftwerk Union Aktiengesellschaft. Probe for the nondestructive testing of cylindrical cavities, especially of steam generator tubes. 4,523,470, Cl. 73-623.000.
Municipal Industries, Inc.: *See*—
Dittmann, Fred M., Jr., 4,523,491, Cl. 74-360.000.
Murai, Naoyuki: *See*—
Terayama, Fusaji; Kohzai, Tetsuo; and Murai, Naoyuki, 4,523,685, Cl. 212-247.000.
Muramatsu, Motoyasu: *See*—
Suzuki, Yukio; Sato, Kunihiko; and Muramatsu, Motoyasu, 4,523,570, Cl. 123-478.000.
Muroi, Katsumi: *See*—
Kuge, Toshio; Yokoyama, Hiroshi; Nogita, Shunsuke; Nakamura, Yoichi; and Muroi, Katsumi, 4,523,927, Cl. 44-1.00B.
Murphy, Stephan D.: *See*—
Derkacs, Thomas; Matay, Istvan M.; Murphy, Stephan D.; and Touhalisky, John, 4,523,468, Cl. 73-598.000.
Murray, Andrew E.: *See*—
Seilly, Alec H.; and Murray, Andrew E., 4,523,569, Cl. 123-458.000.
Murray, Gary P.: *See*—
Lower, Ralph C.; and Murray, Gary P., 4,523,897, Cl. 417-244.000.
Murray, James G., to Mobil Oil Corporation. Impact polymer composition. 4,524,184, Cl. 525-314.000.
Murray, Royce W.: *See*—
Samuels, George J.; Schmitkons, Thomas A.; Streeter, Terry L.; and Murray, Royce W., 4,524,114, Cl. 429-42.000.
Murray, Scott L., to Motor Wheel Corporation. Brake rotor with vibration harmonic suppression, and method of manufacture. 4,523,666, Cl. 188-218.0XL.
Musser, Harry R.; Strickland, Thomas H.; and Zannucci, Joseph S., to Eastman Kodak Company. Stabilized copolyesterether compositions suitable for outdoor applications. 4,524,165, Cl. 524-99.000.
Muth, Ross R.: *See*—
Kaplan, Donald S.; and Muth, Ross R., 4,523,591, Cl. 128-334.00R.
Muther, Paul: *See*—
Buchel, Urs; and Muther, Paul, 4,523,923, Cl. 8-524.000.
Mutschler, Ulrich, to Staubli-Verdol. Reverse weaving mechanisms. 4,523,915, Cl. 464-3.000.
Nagaki, Takehiro: *See*—
Uchida, Hiroyuki; Nagaki, Takehiro; Imakoshi, Shigeyoshi; Soda, Yutaka; Sugita, Junkichi; and Sekiya, Tetsuo, 4,524,401, Cl. 360-113.000.
Nagakubo, Yoshihide, to Tokyo Shibaura Denki Kabushiki Kaisha. Method for manufacturing a semiconductor device. 4,523,369, Cl. 29-576.00W.
Nagano, Katsumi, to Tokyo Shibaura Denki Kabushiki Kaisha. Analog arithmetic operation circuit. 4,524,292, Cl. 307-494.000.
Nagase, Hiroshi, to Fujikura Kasei Co., Ltd. Process for producing water-absorbing resins. 4,524,186, Cl. 525-328.800.
Nagase, Hiroshi; and Okuyama, Toshiaki, to Hitachi, Ltd. Method and apparatus of controlling induction motors. 4,524,310, Cl. 318-808.000.
Nagashima, Masato; Katsuyama, Mikizo; and Yamamoto, Masahiro, to Dainippon Screen Manufacturing Co., Ltd. Device for transferring information through fiberoptic bundles without distortion of information transferred therethrough. 4,523,805, Cl. 350-96.240.
Nagashima, Nao, to Canon Kabushiki Kaisha. Image formation system. 4,524,394, Cl. 358-296.000.
Nagashima, Nobuharu: *See*—
Eguchi, Mitsuo; Tagawa, Kiyoharu; Ogawa, Hitoshi; Bandai, Mikio; and Nagashima, Nobuharu, 4,523,829, Cl. 354-406.000.
Nagashima, Takashi: *See*—
Hisajima, Masahiko; Kimura, Hiroshi; Shigemura, Yutaka; Yada, Isao; Irie, Yoichiro; Morimoto, Kiyoshi; and Nagashima, Takashi, 4,523,754, Cl. 271-264.000.
Naguib, Hussein M.: *See*—
Blaauw, Cornelis; Naguib, Hussein M.; Ahmed, Syed M.; and Aftab, Ahmad, 4,524,091, Cl. 427-74.000.
Nakagama, Syoji: *See*—
Maekawa, Kouji; Kato, Mamoru; Nakagama, Syoji; and Sano, Yumiko, 4,524,117, Cl. 430-44.000.
Nakajima, Hideo: *See*—
Ogasawara, Shingo; and Nakajima, Hideo, 4,523,547, Cl. 119-52.00B.
Nakamura, Hitoshi: *See*—
Suganuma, Tetsuya; Kazuoka, Koji; Fujita, Shuichi; Takahashi, Yoshitaka; Ueda, Katsuhiko; and Nakamura, Hitoshi, 4,524,046, Cl. 419-8.000.
Nakamura, Katuyuki; and Neki, Kazuya, to Asahi Kasei Kogyo Kabushiki Kaisha. Polyester composition and production thereof. 4,524,191, Cl. 525-425.000.
Nakamura, Kyoichi: *See*—
Maeda, Hirofumi; Nakamura, Kyoichi; and Hatamoto, Toshihiro, 4,524,154, Cl. 521-58.000.
Nakamura, Yoichi: *See*—
Kuge, Toshio; Yokoyama, Hiroshi; Nogita, Shunsuke; Nakamura, Yoichi; and Muroi, Katsumi, 4,523,927, Cl. 44-1.00B.
Nakamura, Yukinobu; Tagami, Katsutoshi; and Takahashi, Tsuneo, to Honda Giken Kogyo Kabushiki Kaisha. Apparatus for visually indicating the current location of an automotive vehicle. 4,524,357, Cl. 340-995.000.
Nakata, Yasushi: *See*—
Nishizaki, Tomoyoshi; Miyamoto, Minoru; Miyamoto, Kazuaki; Yoshida, Ken; Yamaji, Katsuhiko; and Nakata, Yasushi, 4,523,635, Cl. 165-104.120.
Nakatani, Kaname; Miyakawa, Nobuhiro; Higashiguchi, Teruaki; and Edo, Tomomi, to Mita Industrial Co., Ltd. Electrophotographic photosensitive material with ozone inhibitor. 4,524,118, Cl. 430-56.000.
Nakatani, Keiji; Yamagishi, Seiichi; and Ishii, Kenjiro, to Minolta Camera Kabushiki Kaisha. Roll film carrier used in reader or reader printer. 4,524,315, Cl. 318-603.000.
Nakatomi, Yoshitsugu: *See*—
Yokoo, Makoto; Nakatomi, Yoshitsugu; and Hashimoto, Shinichi, 4,523,831, Cl. 355-3.00R.
Nakayama, Shouji; Takanashi, Yukio; Higuchi, Toshiharu; and Yakabe, Touru, to Tokyo Shibaura Denki Kabushiki Kaisha. Cathode structure for electron tube. 4,524,296, Cl. 313-270.000.
Nalco Chemical Company: *See*—
Cosper, David R.; and McKay, Gretchen L., 4,523,932, Cl. 55-85.000.
Nambu, Masao, to Nippon Oil Company, Limited. Wound-covering materials. 4,524,064, Cl. 424-81.000.
Nambudiri, Easwaran C. N.: *See*—
Abellana, Jovito N.; and Nambudiri, Easwaran C. N., 4,523,523, Cl. 101-235.000.
Napintas Pty. Ltd.: *See*—
Robinson, Allan F.; and Hunter, Warwick A., 4,523,385, Cl. 33-296.000.
Narimatsu, Akihisa; and Ohkubo, Hiroyuki, to Sony Magnescale Incorporation. Scaling device. 4,523,381, Cl. 33-125.00C.
National Research Development Corporation: *See*—
Gorman, Barry; and Hearn, Edwin J., 4,523,848, Cl. 356-368.000.
Navarro, Carlos R., to Concast AG. Method for the transverse conveying of strand sections of a multi-strand continuous casting installation and transverse conveying apparatus for a multi-strand casting installation. 4,523,672, Cl. 198-461.000.
Naylor, Carter G., to Texaco Inc. Dicyclopentadiene sulfonate liquid detergent formulations. 4,524,022, Cl. 252-548.000.

Naylor, Carter G.: *See—*
McCoy, David R.; and Naylor, Carter G., 4,524,023, Cl. 252-548.000.
NCR Corporation: *See—*
Maheras, George; and Hayworth, Hubert O., 4,523,851, Cl. 356-399.000.
Sullivan, Paul A.; and Collins, George J., 4,523,370, Cl. 29-576.00B.
NEC Corporation: *See—*
Eguchi, Hirotugu, 4,524,377, Cl. 357-59.000.
Necchi S.p.A.: *See—*
Bar, Alfredo, 4,523,663, Cl. 181-403.000.
Neefe, Charles W. Method of making bifocal lens blanks. 4,524,035, Cl. 264-1.800.
Negishi, Takao; Kojima, Teiryo; and Tomiita, Kazuo, to Toray Industries, Inc. Process for manufacturing textured multifilament yarn having alternating twist. 4,523,428, Cl. 57-288.000.
Neki, Kazuya: *See—*
Nakamura, Katuyuki; and Neki, Kazuya, 4,524,191, Cl. 525-425.000.
Nel-Tech Development, Inc.: *See—*
Hyatt, David R., 4,524,349, Cl. 340-500.000.
Nelson, Carl, to Aerochem, Inc. Method and apparatus for automated chemical milling of compound curved surfaces. 4,523,973, Cl. 156-626.000.
Nelson, Mark D.: *See—*
Goss, Willis C.; Nelson, Mark D.; and McLauchlan, John M., 4,523,810, Cl. 350-320.000.
Nenninger, Klaus: *See—*
Rosenbladt, Rudolf V.; Nenninger, Klaus; and Schussler, Rudolf, 4,523,853, Cl. 356-446.000.
Nepper, Robert F.; Solyntjes, Alan J.; and Abrahamson, Carl W., to Minnesota Mining and Manufacturing Company. Continuous copier. 4,523,836, Cl. 355-16.000.
Nesheiwat, Afif M.: *See—*
Sherk, Fred T.; Nesheiwat, Afif M.; and Senatore, Guy, 4,524,200, Cl. 528-388.000.
Neuhaus, Gunter: *See—*
Albers, Rolf; Aschenbruck, Emil; Neuhaus, Gunter; and Kotzur, Joachim, 4,523,764, Cl. 277-3.000.
Neuzil, Richard W.: *See—*
Cleary, Michael T.; Kulprathipanja, Santi; and Neuzil, Richard W., 4,524,029, Cl. 260-419.000.
Cleary, Michael T.; Kulprathipanja, Santi; and Neuzil, Richard W., 4,524,030, Cl. 260-419.000.
New, James S.; and Yevich, Joseph P., to Mead Johnson & Company. 1-Heteroaryl-4-(2,5-pyrrolidinedion-1-yl)alkyl)piperazine derivatives. 4,524,206, Cl. 544-230.000.
Newman, Gary H.: *See—*
Stock, Rodney D.; and Newman, Gary H., 4,524,240, Cl. 174-68.500.
Niel, Michel: *See—*
Pichat, Philippe; Niel, Michel; and Sinn, Robert, 4,523,954, Cl. 106-110.000.
Niesel, Peter: *See—*
Lang, Walter; Muller, Dieter; Muchel, Franz; Wanner, Roland; and Niesel, Peter, 4,523,821, Cl. 351-214.000.
Nihon Radiotor Co., Ltd.: *See—*
Sawabe, Mitsuo; and Imai, Kouichi, 4,523,374, Cl. 29-597.000.
Niizeki, Kinya: *See—*
Takahashi, Masahiro; Hagiwara, Toshio; Nishizaki, Takao; and Niizeki, Kinya, 4,523,433, Cl. 62-60.000.
Nikkan Industries Co., Ltd.: *See—*
Shimizu, Tadao; Shimizu, Noriyuki; and Harada, Shoji, 4,524,098, Cl. 428-156.000.
Shimizu, Tadao; Shimizu, Noriyuki; and Harada, Shoji, 4,524,100, Cl. 428-283.000.
Nikkel, Ronnie D.; and L'Esperance, Paul M. Collector means for solar energy collecting system. 4,523,575, Cl. 126-418.000.
Nikolaev, Nikolai I.: *See—*
Eberling, Igor L.; Tereschenko, Lev A.; Nikolaev, Nikolai I.; Yakovlev, Arian M.; Kovalenko, Vitaly I.; Lipatov, Nikolai K.; Tatevosian, Ruben A.; and Titov, Mikhail Y., 4,524,319, Cl. 324-65.00R.
Nilsson, Orjan: *See—*
Forslund, Lennart; and Nilsson, Orjan, 4,523,894, Cl. 417-161.000.
Nippon Electric Co., Ltd.: *See—*
Egami, Kazunari; Umeda, Tetsuo; Tsukakoshi, Naoto; and Nishijima, Yasuo, 4,524,453, Cl. 382-1.000.
Hiromori, Kunio; and Tsuda, Kiyoshi, 4,523,753, Cl. 271-31.100.
Kimoto, Manabu, 4,524,417, Cl. 364-200.000.
Nippon Gakki Seizo Kabushiki Kaisha: *See—*
Yokoyama, Kenji, 4,524,335, Cl. 332-9.00R.
Nippon Kogaku K.K.: *See—*
Iida, Yoshikazu; Hagyuda, Nobuyoshi; and Hasegawa, Hiroshi, 4,523,830, Cl. 354-416.000.
Nippon Light Metal Co., Ltd.: *See—*
Takahashi, Masahiro; Hagiwara, Toshio; Nishizaki, Takao; and Niizeki, Kinya, 4,523,433, Cl. 62-60.000.
Nippon Oil Company, Limited: *See—*
Nambu, Masao, 4,524,064, Cl. 424-81.000.
Nippon Petrochemicals Co., Ltd.: *See—*
Inoue, Yoshiharu; Tanimoto, Fumio; and Kitano, Hisao, 4,524,017, Cl. 252-522.00R.
Nippon Seiko Kabushiki Kaisha: *See—*
Okoshi, Hideo, 4,523,863, Cl. 384-609.000.
Nippon Soken, Inc.: *See—*
Kodera, Masao; Akita, Shigeyuki; and Yoshino, Yasuhisa, 4,524,356, Cl. 340-904.000.
Matsumoto, Muneaki; Kuno, Akira; and Numata, Koji, 4,523,386, Cl. 33-357.000.
Mukainakano, Shinichi; Hattori, Tadashi; Nishida, Minoru; Mizuno, Toru; and Goto, Tukasa, 4,523,552, Cl. 123-143.00B.
Takagi, Shigeru; and Tomita, Masahiro, 4,523,935, Cl. 55-282.000.
Nippon Steel Corporation: *See—*
Oka, Joji; Iwakura, Hideaki; Ando, Narumi; Iwasaki, Kiyotoshi; and Shindow, Yoshio, 4,524,111, Cl. 428-551.000.
Nippon Telegraph & Telephone Public Corporation: *See—*
Iwata, Atsushi; Kaneko, Takao; Ito, Akihiko; Saito, Tadahiro; and Fukui, Hirokazu, 4,524,333, Cl. 331-17.000.
Nippondenso Co., Ltd.: *See—*
Maruyama, Kimio, 4,523,500, Cl. 83-37.000.
Mukainakano, Shinichi; Hattori, Tadashi; Nishida, Minoru; Mizuno, Toru; and Goto, Tukasa, 4,523,552, Cl. 123-143.00B.
Nirdosh, Inderjit: *See—*
Baird, Malcolm H. I.; and Nirdosh, Inderjit, 4,523,456, Cl. 73-64.400.
Nishida, Minoru: *See—*
Mukainakano, Shinichi; Hattori, Tadashi; Nishida, Minoru; Mizuno, Toru; and Goto, Tukasa, 4,523,552, Cl. 123-143.00B.
Nishijima, Yasuo: *See—*
Egami, Kazunari; Umeda, Tetsuo; Tsukakoshi, Naoto; and Nishijima, Yasuo, 4,524,453, Cl. 382-1.000.
Nishimura, Katsuji; and Yamamoto, Hachizou, to Sharp Kabushiki Kaisha. Cash accounting system having data compiling capability. 4,524,267, Cl. 235-379.000.
Nishimura, Tadashi, to Mitsubishi Denki Kabushiki Kaisha. Method for fabricating monocrystalline semiconductor layer on insulating layer by laser crystallization using a grid of anti-reflection coating disposed on poly/amorphous semiconductor. 4,523,962, Cl. 148-1.500.
Nishimura, Toshio; and Morita, Akitaka, to Sharp Kabushiki Kaisha. Combined electronic calculator and electronic alarm timepiece. 4,523,858, Cl. 368-272.000.
Nishio, Toyokazu: *See—*
Miki, Shinji; Nishio, Toyokazu; Matsuyama, Shinzo; and Yamazaki, Shinichi, 4,523,874, Cl. 405-43.000.
Nishioka, Nobuaki; Makio, Tatsumi; and Ito, Katsutsune, to Minolta Camera Kabushiki Kaisha. Electrostatic recording apparatus. 4,524,370, Cl. 346-155.000.
Nishiyama, Masao; Katada, Keiichiro; and Akimoto, Yoshiteru, to UBE Industries, Ltd. Reaction injection molding method. 4,524,044, Cl. 264-328.600.
Nishizaki, Takao: *See—*
Takahashi, Masahiro; Hagiwara, Toshio; Nishizaki, Takao; and Niizeki, Kinya, 4,523,433, Cl. 62-60.000.
Nishizaki, Tomoyoshi; Miyamoto, Minoru; Miyamoto, Kazuaki; Yoshida, Ken; Yamaji, Katsuhiko; and Nakata, Yasushi, to Sekisui Kagaku Kogyo Kabushiki Kaisha. Metal hydride heat pump system. 4,523,635, Cl. 165-104.120.
Nishizawa, Junichi; Tamamushi, Takashige; Shimanuki, Koji; and Inuiya, Masafumi, to Fuji Photo Film Co., Ltd. Two-dimensional solid-state image sensor device. 4,524,391, Cl. 358-213.000.
Nishizawa, Masahiro: *See—*
Fujimura, Takashi; and Nishizawa, Masahiro, 4,524,306, Cl. 315-326.000.
Nissan Chemical Industries Ltd.: *See—*
Suzuki, Hideo; Ohtsuka, Kanji; and Adachi, Masami, 4,524,213, Cl. 549-235.000.
Nissan Motor Company, Limited: *See—*
Ohsawa, Eiji; and Kajita, Shunsuke, 4,523,715, Cl. 236-49.000.
Nittan Company, Limited: *See—*
Kimura, Tetsuo; Fujii, Hirofumi; Yuasa, Hayami; and Yonezawa, Tatuo, 4,524,351, Cl. 340-629.000.
Nixdorf Computer AG: *See—*
Hullwegen, Josef, 4,524,448, Cl. 375-118.000.
Noack, Rainer: *See—*
Heinemann, Wolfgang; Noack, Rainer; and Weyl, Helmut, 4,524,038, Cl. 264-61.000.
Noble, James R. Back exercising device. 4,523,583, Cl. 128-71.000.
Nobukawa, Akira; and Sawaguchi, Tatsue, to Kitagawa Iron Works Co. Ltd. Cooling system of rotary fluid pressure cylinder for chucking in machine tools. 4,523,632, Cl. 165-47.000.
Nocon, Gene. Photographic timer. 4,524,290, Cl. 307-141.400.
Nogita, Shunsuke: *See—*
Kuge, Toshio; Yokoyama, Hiroshi; Nogita, Shunsuke; Nakamura, Yoichi; and Muroi, Katsumi, 4,523,927, Cl. 44-1.00B.
Nomura, Yukihiro: *See—*
Sugisawa, Ko; Yamamoto, Masanori; Shibuki, Masaru; Nomura, Yukihiro; Sengoku, Kouji; and Higashine, Seiji, 4,524,080, Cl. 426-236.000.
Nordica S.p.A.: *See—*
Borsoi, Bruno, 4,523,395, Cl. 36-119.000.
Normand, Randall J.: *See—*
Akers, James B., Jr.; Leng, Douglas E.; and Normand, Randall J., 4,524,189, Cl. 525-35.00G.
Norris, Philip, to Polaroid Corporation. Film processing apparatus and system. 4,523,825, Cl. 354-301.000.
North American Philips Consumer Electronics Corp.: *See—*
Pawlikowski, Stanley L.; and Tamburrino, Richard A., 4,524,298, Cl. 313-405.000.
North American Philips Corporation: *See—*
Preston, George V., III, 4,524,299, Cl. 313-487.000.

North Side Packing Company: *See*—
Hofmann, Richard E.; and Hofmann, Robert G., Jr., 4,523,520, Cl. 99-352.000.
Northern Telecom Limited: *See*—
Bouffard, Jean; Dumoulin, Andre ; and Lederhose, Edgar K., 4,523,423, Cl. 57-59.000.
Norton Christensen, Inc.: *See*—
Heidemann, Gerhard, 4,523,765, Cl. 277-165.000.
Norton Company: *See*—
Williston, William H., 4,523,930, Cl. 51-293.000.
Nose, Noriyuki: *See*—
Baba, Takeshi; Nose, Noriyuki; Yoshikawa, Hideo; Minoura, Kazuo; Hasu, Akinori; Minami, Setsuo; and Matsuoka, Kazuhiko, 4,523,801, Cl. 350-6.800.
Nowag, Reinhard: *See*—
Twiehoff, Karl-Heinz; and Nowag, Reinhard, 4,524,460, Cl. 383-45.000.
Nu-Way Energy Limited: *See*—
Lewis, David, 4,523,905, Cl. 431-351.000.
Nukem GmbH: *See*—
Schmidt, Gerhard; and Kohlpoth, Walter, 4,524,048, Cl. 422-159.000.
Numata, Koji: *See*—
Matsumoto, Muneaki; Kuno, Akira; and Numata, Koji, 4,523,386, Cl. 33-357.000.
Nusonics, Inc.: *See*—
Zacharias, Ellis M., Jr., 4,523,478, Cl. 73-861.280.
Nutzel, Karl: *See*—
Bauer, Armin; Ehrend, Helfried; Morche, Klaus; Nutzel, Karl; and Sauerbier, Michael, 4,524,182, Cl. 525-120.000.
Ober, Christopher K.: *See*—
Lok, Kar P.; and Ober, Christopher K., 4,524,199, Cl. 527-313.000.
Oberg, Sven: *See*—
Auberry, Horace; Liebscher, Anton; and Oberg, Sven, 4,523,346, Cl. 12-133.00R.
O'Callaghan, Fred G.: *See*—
Breckinridge, James B.; and O'Callaghan, Fred G., 4,523,846, Cl. 356-346.000.
Oce-Helioprint AS: *See*—
Hagedorn-Olsen, Jens, 4,523,840, Cl. 355-91.000.
Ochs, Siegfried: *See*—
Bayer, Ulrich; and Ochs, Siegfried, 4,523,457, Cl. 73-114.000.
Oda, Goro: *See*—
Yamashita, Mitsuo; Oda, Goro; and Kamiya, Masashi, 4,523,800, Cl. 350-6.700.
Oduro-Yeboah, Joshua, to Beecham Group p.l.c. Pharmaceutical formulations containing pseudomonic acid. 4,524,075, Cl. 514-451.000.
Ogasawara, Shingo; and Nakajima, Hideo, to Kabushiki Kaisha Nakajima Seisakujo. Device supplying constant amount of feed. 4,523,547, Cl. 119-52.00B.
Ogata, Yasuzi, to Olympus Optical Co., Ltd. Zoom lens system. 4,523,813, Cl. 350-426.000.
Ogawa, Akira: *See*—
Aoki, Kozo; Umemoto, Makoto; and Ogawa, Akira, 4,524,132, Cl. 430-552.000.
Ogawa, Hitoshi: *See*—
Eguchi, Mitsuo; Tagawa, Kiyoharu; Ogawa, Hitoshi; Bandai, Mikio; and Nagashima, Nobuharu, 4,523,829, Cl. 354-406.000.
Ogawa, Takahiro: *See*—
Yamazaki, Kaoru; Kurioka, Shunichiro; Sakata, Mitsuya; and Ogawa, Takahiro, 4,524,193, Cl. 526-79.000.
Oguri, Katsuhiko, to Victor Company of Japan, Limited. Electromagnetic pickup cartridge with flux sensors mounted above moving magnet. 4,524,439, Cl. 369-136.000.
Ohkata, Ichizo, to Kato Hatsujo Kaisha Ltd. Freeze preventing valve. 4,523,605, Cl. 137-62.000.
Ohkubo, Hiroyuki: *See*—
Narimatsu, Akihisa; and Ohkubo, Hiroyuki, 4,523,381, Cl. 33-125.00C.
Ohloff, Gunther: *See*—
Giersch, Wolfgang K.; and Ohloff, Gunther, 4,524,019, Cl. 252-522.00R.
Ohno, Junichi: *See*—
Ohta, Takao; and Ohno, Junichi, 4,523,963, Cl. 148-1.500.
Ohno, Shigeru: *See*—
Kishimoto, Shinzo; Ohno, Shigeru; and Tsujikawa, Teruaki, 4,524,129, Cl. 430-393.000.
Ohsawa, Eiji; and Kajita, Shunsuke, to Nissan Motor Company, Limited. Method and apparatus for air conditioner control. 4,523,715, Cl. 236-49.000.
Ohta, Jyun: *See*—
Yoshida, Hatsuyoshi; Fukutome, Michio; Ohuchi, Makoto; and Ohta, Jyun, 4,524,254, Cl. 200-83.00R.
Ohta, Takao; and Ohno, Junichi, to Tokyo Shibaura Denki Kabushiki Kaisha. Method of fabricating MOS device on a SOS wafer by stabilizing interface region with silicon and oxygen implant. 4,523,963, Cl. 148-1.500.
Ohtombe, Ko, to Tokyo Shibaura Denki Kabushiki Kaisha. Apparatus for detecting a security thread embedded in a paper-like material. 4,524,276, Cl. 250-338.000.
Ohtsuka, Kanji: *See*—
Suzuki, Hideo; Ohtsuka, Kanji; and Adachi, Masami, 4,524,213, Cl. 549-235.000.
Ohuchi, Makoto: *See*—
Yoshida, Hatsuyoshi; Fukutome, Michio; Ohuchi, Makoto; and Ohta, Jyun, 4,524,254, Cl. 200-83.00R.
Ohzeki, Yoshiaki, to Ricoh Company, Ltd. Facsimile communication system. 4,524,393, Cl. 358-257.000.
Oka, Joji; Iwakura, Hideaki; Ando, Narumi; Iwasaki, Kiyotoshi; and Shindow, Yoshio, to Nippon Steel Corporation. Weldable paint-coated steel sheets having excellent corrosion resistance. 4,524,111, Cl. 428-551.000.
Okada, Akira: *See*—
Sakaguchi, Haruo; Seki, Norio; Yamamoto, Shu; and Okada, Akira, 4,523,802, Cl. 350-96.120.
Okada, Takashi; Ikeda, Yasunari; and Tanaka, Yutaka, to Sony Corporation. Double-scanning non-interlace television receiver with vertical aperture correction circuit. 4,524,379, Cl. 358-11.000.
Okada, Takashi: *See*—
Tanaka, Yutaka; and Okada, Takashi, 4,524,382, Cl. 358-31.000.
Okamoto, Yasushi: *See*—
Yamamoto, Keisaku; Yoshida, Nobuyuki; Okamoto, Yasushi; Imai, Akio; Seki, Tomoaki; Furukawa, Hiroshi; and Saito, Yuichi, 4,523,618, Cl. 152-209.00R.
Okazaki, Masaki: *See*—
Genba, Tsuneo; Mizobe, Akio; and Okazaki, Masaki, 4,524,042, Cl. 264-211.000.
Okazaki, Tetuji; Kawasaki, Kanji; and Hirose, Masayoshi, to Omron Tateisi Electronics Co. Motor-driven electric timer. 4,524,252, Cl. 200-38.00E.
Okazaki, Yutaka: *See*—
Sakano, Isao; Yokoyama, Tatsuro; Kajiya, Seitaro; Okazaki, Yutaka; Tokuda, Hiroshi; Kawazura, Hiroshi; Kumakura, Mikio; and Awaya, Akira, 4,524,147, Cl. 514-274.000.
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Butt, Sheldon H., 4,524,238, Cl. 174-52.0FP.
Haque, Reza; and Smith, Edward F., III, 4,524,089, Cl. 427-38.000.
Laws, Harold H.; Caruso, Bart P.; and Hascall, James G., 4,523,364, Cl. 29-33.00S.
Sandel, Bonnie B., 4,524,006, Cl. 252-51.50A.
Olsen, David W.: *See*—
Moore, Donald E.; and Olsen, David W., 4,523,686, Cl. 212-152.000.
Olympus Optical Co., Ltd.: *See*—
Kikuchi, Juro, 4,523,817, Cl. 350-465.000.
Ogata, Yasuzi, 4,523,813, Cl. 350-426.000.
Saito, Shoichi; and Shirako, Hideo, 4,523,680, Cl. 206-387.000.
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Omitsu, Takashi, to Aisin Seiki Kabushiki Kaisha. Control system and method for a fuel delivery system. 4,523,565, Cl. 123-399.000.
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O'Neill, Hugh, to Sling-All Ltd. Hanging strapped shelves. 4,523,526, Cl. 108-149.000.
Ong, Helen H.; Anderson, Vernon B.; and Profitt, James A., to Hoechst-Roussel Pharmaceuticals Inc. Process for preparing substituted 1,3-dihydrospiro[benzo(c)thiophene]s. 4,524,207, Cl. 546-17.000.
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Optyl Eyewear Fashion International Corporation: *See*—
Dianitsch, Franz; and Pschebezin, Anton, 4,523,819, Cl. 351-106.000.
Opus, Inc.: *See*—
Latham, Peter A., 4,523,546, Cl. 119-51.00R.
Orea Mateo, Fernando, to Ingenieria del Calzado, S.A. (I.C.A.S.A.). Last with a replaceable tip. 4,523,345, Cl. 12-133.00R.
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Faith, Richard W., 4,524,331, Cl. 330-292.000.
Orrico, Mario M. V., to Honeywell Inc. Check valve. 4,523,610, Cl. 137-512.150.
Orsic, Milo, to AT&T Bell Laboratories. Fast circuit switching system. 4,524,440, Cl. 370-54.000.
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Arichi, Shigeru; and Uchida, Yoshihiro, 4,524,067, Cl. 514-33.000.
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Mengel, Ronald E., 4,523,501, Cl. 83-42.000.
Osterhout, Ralph F.; Burr, John D.; and Larson, Eric R., to Tekna. Knife with retractable sheath. 4,523,379, Cl. 30-151.000.

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Ota, Tadashi, to Kabushiki Kaisha Suwa Seikosha. Liquid crystal display matrix including a non-linear device. 4,523,811, Cl. 350-333.000.
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Kigawa, Shuji; and Otake, Eiji, 4,523,752, Cl. 271-9.000.
Otte, Joseph N. A., to Dow Chemical, Belgium, S.A. Method for the production of high fructose corn syrup. 4,523,960, Cl. 127-46.200.
Otten, Hans-Gunter: *See—*
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Ouchi, Kiyoshi, to Ebara Corporation. Submergible motor pump assembly. 4,523,899, Cl. 417-360.000.
Owen, Donald W. Transformer with series-parallel-series winding between split winding. 4,524,341, Cl. 336-147.000.
Owens-Corning Fiberglas Corporation: *See—*
Brady, Thomas R.; and Benner, Lester C., 4,523,543, Cl. 118-697.000.
Helser, Jerry L., 4,523,955, Cl. 106-120.000.
Owens-Illinois, Inc.: *See—*
Martin, Merritt W., 4,523,904, Cl. 425-539.000.
Yakubek, Louis, 4,524,409, Cl. 362-189.000.
Oxenrider, Bryce C.: *See—*
Long, David J.; and Oxenrider, Bryce C., 4,524,215, Cl. 560-052.000.
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Moriyama, Yukinori; and Ozaki, Tsukasa, 4,523,449, Cl. 72-421.000.
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Koike, Eishi, 4,524,437, Cl. 369-67.000.
Paap, Hans J., to Texaco Inc. Behind casing water flow detector. 4,524,272, Cl. 250-265.000.
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Lee, Byung S.; and Kim, Chang K., 4,524,136, Cl. 435-139.000.
Paffoni, Camillo; Carlini, Filippo M.; Bottaccio, Giorgio; and Osti, Alberto, to Montedison S.p.A. Photostable yellow composite pigments and process for their preparation. 4,523,953, Cl. 106-23.000.
Page, David W., to Burroughs Corporation. Dynamic data re-programmable PLA. 4,524,430, Cl. 365-189.000.
Paikoff, Myron; Hain, Robert W.; and Hadtke, Frederick B., to Sterling Drug Inc. Pre-sterilized medical procedure kit packages. 4,523,679, Cl. 206-370.000.
Paitchell, Harold, to Hayward Industries. Rotatable unitary ball valve. 4,523,740, Cl. 251-315.000.
Palacio, Joaquin J.; and Cristobal, Carlos C., to Gang-Nail Systems, Inc. Ribbed connector and joist structure. 4,523,419, Cl. 52-690.000.
Pall Corporation: *See—*
Pall, David B.; Degen, Peter J.; Joffee, Irving B.; Foss, Warren M.; and Gsell, Thomas C., 4,523,995, Cl. 210-504.000.
Pall, David B.; Degen, Peter J.; Joffee, Irving B.; Foss, Warren M.; and Gsell, Thomas C., to Pall Corporation. Charge-modified microfiber filter sheets. 4,523,995, Cl. 210-504.000.
Pap nee Imrenyi, Gabriella: *See—*
Szejtli, Jozsef; Budai, Zsuzsanna; Radvany nee Hegedus, Erzsebet; Papp, Laszlo ; Kormoczy, Gyorgy; and Pap nee Imrenyi, Gabriella, 4,524,068, Cl. 514-58.000.
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Campbell, James F., 4,523,671, Cl. 198-422.000.
Spencer, Harvey J., 4,523,969, Cl. 156-161.000.
Papp, Laszlo : *See—*
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Parg, Adolf; Wuerzer, Bruno; and Hamprecht, Gerhard, to BASF Aktiengesellschaft. Substituted 4,5-dimethoxypyridazones and their use for controlling undesirable plant growth. 4,523,946, Cl. 71-092.000.
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Simmons, Nathaniel; Puccini, Sergio E.; Magnusson, Stig E.; and Parikh, Kamal I., 4,524,441, Cl. 370-63.000.
Parikh, Kanal I.: *See—*
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Parker, Donald W., to Cilco, Inc. Laser blocking shutter. 4,524,271, Cl. 250-233.000.
Parker Hannifin Corporation: *See—*
Kimmelman, Samuel, 4,523,797, Cl. 339-147.00R.
Parker, John J.: *See—*
Fouss, James L.; Parker, John J.; Child, James L., Jr.; and Sting, Donald W., 4,523,613, Cl. 138-121.000.
Parker, Vernon L.: *See—*
Laush, Frank I.; and Parker, Vernon L., 4,523,933, Cl. 55-97.000.
Pastor, Stephen D.: *See—*
Spivack, John D.; and Pastor, Stephen D., 4,524,166, Cl. 524-117.000.
Spivack, John D.; and Pastor, Stephen D., 4,524,167, Cl. 524-121.000.
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Thibault, William C.; and Pate, Paul E., 4,523,376, Cl. 29-623.200.
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Vessey, John R.; Patel, Chandrakant M.; and Armstrong, Jack, 4,523,673, Cl. 198-486.000.
Patterson, Paul L. Thermionic detector with multiple layered ionization source. 4,524,047, Cl. 422-98.000.
Paulson, John W.; and Schulz, David J., to Rayovac Corporation. Voltage stabilizing agents for cells. 4,524,115, Cl. 429-50.000.
Pawlikowski, Stanley L.; and Tamburrino, Richard A., to North American Philips Consumer Electronics Corp. Color cathode ray tube incorporating improved thermal compensation type aperture mask supporting means. 4,524,298, Cl. 313-405.000.
Payne, Ghislaine R. L.: *See—*
Payne, Harold J. W.; and Payne, Ghislaine R. L., 4,523,416, Cl. 52-221.000.
Payne, Harold J. W.; and Payne, Ghislaine R. L., to H. H. Robertson (U.K.) Limited. Flooring system with service trunking provision. 4,523,416, Cl. 52-221.000.
Payrhammer, Bernd; and Knor, Bernhard, to Agfa-Gevaert Aktiengesellschaft. Method and arrangement for evaluating a series of originals for copying. 4,523,839, Cl. 355-68.000.
Pearson, H. Alton. Showerhead. 4,523,718, Cl. 239-106.000.
Pedersen, David R.; and Tong, Curtis M., to Dow Chemical Company, The. Flowmeter with no moving parts. 4,523,464, Cl. 73-216.000.
Peikert, Jurgen. Air intake control for an adjustable air inlet, particularly two-dimensional oblique shock diffuser for gas turbine jet engines for the propulsion of high performance aircraft. 4,523,603, Cl. 137-15.200.
Pelda, Frederick J.; and Schmaling, Roderick N., to Pitney Bowes Inc. Dry toner replenishing apparatus. 4,523,834, Cl. 355-3.0DD.
Penick, Joe E., to Mobil Oil Corporation. Feed mixing techique for fluidized catalytic cracking of hydrocarbon oil. 4,523,987, Cl. 208-157.000.
Pennwalt Corporation: *See—*
Riggi, Stephen J.; and Haszeldine, Robert N., 4,524,152, Cl. 514-609.000.
Penz, Perry A., to Texas Instruments Incorporated. Plastic liquid crystal devices with unequal substrate thicknesses. 4,523,812, Cl. 350-334.000.
Perkin-Elmer Corporation, The: *See—*
Duly, Dawn L.; Windischmann, Henry; and Buckley, W. D., 4,523,974, Cl. 156-630.000.
Peterman, Robert J., to Spacesaver Corporation. Lock for manual mobile storage system. 4,523,794, Cl. 312-201.000.
Peterson, Francis C.; Rodseth, William G.; and Spring, William A., to Illinois Tool Works Inc. Printed circuit board fastener. 4,523,883, Cl. 411-171.000.
Petric, Paul F.; and Foley, Michael S., to Varian Associates, Inc. Localized vacuum processing apparatus. 4,524,261, Cl. 219-121.0EL.
Petrie, Colleen Y. Nurse's mitt. 4,523,348, Cl. 15-227.000.
Petrofsky, Jerrold S.: *See—*
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Petroleo Brasileiro S.A. - Petrobras: *See—*
Abdel-Hehim, Hossam A. A.; Coelho, Wagner C.; and Soares, Gloria M. G., 4,523,941, Cl. 71-37.000.
Petrovic, Vladan, to Krupp-Koppers GmbH. Device for drying gypsum. 4,523,906, Cl. 432-197.000.
Pezzner, Richard S.; and Rader, George L., to RSP Innovation Design Mfg., Inc. Combined engine-handling and metalworking machine. 4,523,888, Cl. 414-680.000.
Pfeiffer, Josef: *See—*
Steinberger, Helmut; Kirschnek, Helmut; and Pfeiffer, Josef, 4,524,172, Cl. 524-506.000.
Pfeiffer, Wilfried: *See—*
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Phillips Petroleum Company: *See—*
Sherk, Fred T.; Nesheiwat, Afif M.; and Senatore, Guy, 4,524,200, Cl. 528-388.000.
Piaggio & C. S.p.A.: *See—*
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Pichat, Philippe; Niel, Michel; and Sinn, Robert, to CDF Chimie, S.A. Process for manufacturing cellular plaster and molded plaster articles. 4,523,954, Cl. 106-110.000.
Pietzsch, Ludwig; Kauer, Harald; Duren, Johannes; and Kuhn, Hugo, to IBP Pietzsch GmbH. Device for positioning and position stabilizing. 4,523,487, Cl. 74-378.000.
Pike, Roscoe A.; and Lamm, Foster P., to United Technologies Corporation. Acrylic modified polyester anaerobic adhesive. 4,524,176, Cl. 525-12.000.
Pinckney Molded Plastics, Inc.: *See—*
Kreeger, Elsmer W., 4,523,681, Cl. 206-507.000.
Pinnell, Sheldon R., to Bio-Specifics N.V. Method for the prevention and treatment of scars with enzymes. 4,524,065, Cl. 424-94.000.
Pitney Bowes Inc.: *See—*
Abellana, Jovito N.; and Nambudiri, Easwaran C. N., 4,523,523, Cl. 101-235.000.
Eckert, Alton B.; and McFiggans, Robert B., 4,524,426, Cl. 364-900.000.
Pelda, Frederick J.; and Schmaling, Roderick N., 4,523,834, Cl. 355-3.0DD.
Player, Kenneth W.; and Wilson, Lonny L., to SCM Corporation. Hard butters and compositions made therewith. 4,524,086, Cl. 426-607.000.
Plester, Karl Heinz: *See—*
Hessel, Heinz; and Plester, Karl Heinz, 4,523,512, Cl. 91-168.000.
Plumb, William W.: *See—*
Smith, Donald P.; and Plumb, William W., 4,523,391, Cl. 34-225.000.
Poetsch, Dieter, to Robert Bosch GmbH. Cine film-video scanner system. 4,524,392, Cl. 358-214.000.
Polaroid Corporation: *See—*
Norris, Philip, 4,523,825, Cl. 354-301.000.

Poll, Ian, to Shell Oil Company. Process and burner for the partial combustion of solid fuel. 4,523,529, Cl. 110-263.000.
Polson, Steven S. Food feed chute apparatus. 4,523,505, Cl. 83-713.000.
Polster, Rudolf: *See—*
Fechner, Wolf D.; Polster, Rudolf; Kranz, Joachim; and Hartmann, Eduard, 4,523,958, Cl. 106-288.00Q.
Polychrome Corporation: *See—*
Huang, Jen-chi, 4,524,125, Cl. 430-302.000.
Pongrass, Robert G.; and Rutter, Christopher C. Moisture responsive stiffening members for flexible containers. 4,524,458, Cl. 383-33.000.
Poovey, Homer F., to Hickory Springs Manufacturing Company. Folding bed frame structure for sofa beds or the like. 4,523,342, Cl. 5-250.000.
PORTEC: *See—*
Walker, Jack A., 4,524,314, Cl. 318-587.000.
Porter, W. Duncan: *See—*
Kienlein, Kurt; and Reese, Ralph D., 4,523,698, Cl. 222-185.000.
Post Technologies, Inc.: *See—*
Fish, Russell, III; and Yurchenco, James R., 4,524,242, Cl. 178-4.000.
Poteat, Tommy L.: *See—*
Lindenberger, W. Stewart; Poteat, Tommy L.; and West, James E., 4,524,247, Cl. 179-111.00R.
Prasad, Keni K., to Deere & Company. Lift and dump mechanism for a lawn debris collection box. 4,523,788, Cl. 298-11.000.
Preformed Line Products Company: *See—*
Rosa, Aristheu A., 4,523,355, Cl. 24-115.00N.
Preston, George V., III, to North American Philips Corporation. Fluorescent sunlamp having controlled ultraviolet output. 4,524,299, Cl. 313-487.000.
Price, Barry J.; Clitherow, John W.; Bradshaw, John; Martin-Smith, Michael; Judd, Duncan B.; and Hayes, Roger, to Glaxo Group Limited. Pyrimidone derivatives. 4,524,071, Cl. 514-272.000.
Price, Martin B.: *See—*
Rehfuss, John W.; Hazelwood, Louis S.; and Price, Martin B., 4,524,173, Cl. 524-512.000.
Prime Computer, Inc.: *See—*
Sybel, Randall; and Schwarzkopf, Daniel, 4,524,345, Cl. 340-146.200.
Priola, Aldo: *See—*
Cesca, Sebastiano; Priola, Aldo; and Renzi, Fiorenzo, 4,524,092, Cl. 427-388.200.
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Lavash, Bruce W., 4,523,334, Cl. 2-49.00R.
Purves, Edward R.; and Thomas, Robert F., 4,524,085, Cl. 426-601.000.
Spangler, Richard A., 4,523,333, Cl. 2-49.00R.
Profitt, James A.: *See—*
Ong, Helen H.; Anderson, Vernon B.; and Profitt, James A., 4,524,207, Cl. 546-17.000.
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Eccleston, Larry, 4,524,350, Cl. 340-572.000.
Prototech Company: *See—*
Lindstrom, Robert; and Allen, Robert J., 4,524,094, Cl. 428-36.000.
Pschebezin, Anton: *See—*
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Puccini, Sergio E.: *See—*
Simmons, Nathaniel; Puccini, Sergio E.; Magnusson, Stig E.; and Parikh, Kamal I., 4,524,441, Cl. 370-63.000.
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Pullinen, Martti, to Valmet Oy. Forming shoe for a former in a paper machine. 4,523,978, Cl. 162-300.000.
Pullukat, Thomas J.; Hwang, Yu-Tang; and Dombro, Robert A., to Chemplex Company. Polymerization catalysts and methods. 4,524,141, Cl. 502-107.000.
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Dassler, Armin A., 4,523,396, Cl. 36-134.000.
PureCycle Corporation: *See—*
Blades, Frederick K., 4,523,472, Cl. 73-632.000.
Puresevic, Peter J.; and Taylor, Julian D. Child-proof closure for a container. 4,523,688, Cl. 215-220.000.
Purves, Edward R.; and Thomas, Robert F., to Procter & Gamble Company, The. Lecithin containing cooking fats with reduced thermal discoloration. 4,524,085, Cl. 426-601.000.
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Helbig, Klaus; and Pusch, Guenther, 4,524,435, Cl. 367-41.000.
Quaker Oats Company, The: *See—*
Bansal, Arun K., 4,524,081, Cl. 426-249.000.
Qualeatti, Gail M.; Rosen, Bruce I.; Arena, Blaise J.; and Germanas, Dalia, to UOP Inc. Acid resistant catalyst supports; reduction of fatty acids to fatty alcohols. 4,524,225, Cl. 568-885.000.
Quantel Limited: *See—*
Searby, Anthony D.; and Walker, Ian C., 4,524,421, Cl. 364-521.000.
Quayle, Stanley F.; and Schlosser, Philip A., to Scriptel Corporation. Electrographic system. 4,523,654, Cl. 178-19.000.
Queen, Carl J. Bathing cabinet with transporter cart. 4,523,341, Cl. 4-555.000.
Queensland Phosphate Limited: *See—*
George, Christopher W.; Sinha, Hari N.; Vujcich, Mary R.; and Walker, Graham S., 4,524,054, Cl. 423-308.000.
Quillaud, Gerard: *See—*
Dejaifve, Pierre E.; and Quillaud, Gerard, 4,524,058, Cl. 423-656.000.
R & D Associates: *See—*
Latter, Richard, 4,523,748, Cl. 266-249.000.
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Rader, George L.: *See—*
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Raftis, Spiros G.; and Merritt, George, to Red Valve Co. Inc. Deformable sleeve for a pinch valve. 4,523,738, Cl. 251-4.000.
Rains, Randall C.: *See—*
Lee, George A.; and Rains, Randall C., 4,523,982, Cl. 204-159.150.
Ramsden, Hugh E.: *See—*
Crane, Laura J.; and Ramsden, Hugh E., 4,523,997, Cl. 210-635.000.
Rank, William J., to Control Data Corporation. Connector assembly for mounting leadless chip carriers. 4,523,796, Cl. 339-17.0CF.
Ranken, Paul F.: *See—*
Walter, Thomas J.; and Ranken, Paul F., 4,524,203, Cl. 544-94.000.
Rasmussen GmbH: *See—*
Wachter, Gerhard, 4,523,352, Cl. 24-20.0TT.
Rasmussen, Jerald K.: *See—*
Heilmann, Steven M.; Krepski, Larry R.; and Rasmussen, Jerald K., 4,524,221, Cl. 568-322.000.
Rauch, Hans G. Hydro-current energy converter. 4,524,285, Cl. 290-43.000.
Ray, Ranjan, to Allied Corporation. Method for making metallic glass powder. 4,523,621, Cl. 164-46.000.
Raychem Corporation: *See—*
Morgan, Robert K.; and Yaeger, John R., 4,524,343, Cl. 337-140.000.
Toy, Lester T., 4,523,970, Cl. 156-244.110.
Rayovac Corporation: *See—*
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Raytheon Company: *See—*
Feist, Wolfgang M., 4,523,368, Cl. 29-571.000.
RCA Corporation: *See—*
Acampora, Alfonse, 4,524,423, Cl. 364-724.000.
Bingley, John D., 4,523,429, Cl. 60-203.100.
Covey, Robert L.; and Gale, Michael T., 4,523,850, Cl. 356-375.000.
Desai, Nitin V., 4,524,109, Cl. 428-523.000.
Kane, James, 4,524,127, Cl. 430-321.000.
Levine, Peter A., 4,524,450, Cl. 377-62.000.
Tamer, Gregory G., 4,524,387, Cl. 358-154.000.
Willis, Donald H., 4,524,411, Cl. 363-21.000.
Willis, Donald H.; and Fuhrer, Jack S., 4,524,447, Cl. 375-26.000.
Recker, Florian B. Automatic lock open U-joint coupler. 4,523,871, Cl. 403-12.000.
Red Valve Co. Inc.: *See—*
Raftis, Spiros G.; and Merritt, George, 4,523,738, Cl. 251-4.000.
Redcom Laboratories Inc.: *See—*
Littlefield, Bruce G., 4,524,245, Cl. 179-18.0HB.
Reed International, PLC: *See—*
Graham, Thomas, 4,524,097, Cl. 428-141.000.
Reese, Ralph D.: *See—*
Kienlein, Kurt; and Reese, Ralph D., 4,523,698, Cl. 222-185.000.
Reeves, Jerry L., to Towmotor Corporation. Container handler with programmed electro-hydraulic control circuit. 4,523,886, Cl. 414-641.000.
Rehfuss, John W.; Hazelwood, Louis S.; and Price, Martin B., to Reliance Universal, Inc. Aqueous coating composition comprising a dispersion of polymerized unsaturated monomers, a nonionic surfactant and crosslinking agent. 4,524,173, Cl. 524-512.000.
Reiff, Donald P., to Harnischfeger Corporation. Stacker crane for narrow aisles. 4,523,887, Cl. 414-664.000.
Reinhold, Karl-Heinz: *See—*
Gockel, Karl-Heinz; Anhauser, Dieter; Hoffmann, Hans R.; and Reinhold, Karl-Heinz, 4,524,095, Cl. 428-43.000.
Reinmuth, Klaus: *See—*
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Reist, Walter, to Ferag AG. Folded printed sheet or printed sheet intended to be folded and method and apparatus for fabrication thereof. 4,523,775, Cl. 283-36.000.
Reliance Universal, Inc.: *See—*
Rehfuss, John W.; Hazelwood, Louis S.; and Price, Martin B., 4,524,173, Cl. 524-512.000.
Reneau, Bobby J., to Gripper, Inc. Apparatus for tensioning a stud and method of doing same. 4,523,742, Cl. 254-29.00A.
Renishaw Electrical Limited: *See—*
Rogers, Michael J.; and McMurtry, David R., 4,523,383, Cl. 33-558.000.
Renshaw, Theodore A.; and Curatolo, Joseph A., Jr., to Fairchild Industries, Inc. Method for fabricating a fastener plate. 4,523,710, Cl. 228-111.000.
Renzi, Fiorenzo: *See—*
Cesca, Sebastiano; Priola, Aldo; and Renzi, Fiorenzo, 4,524,092, Cl. 427-388.200.
Rerolle, Yves, to Societe Anonyme dite-les Cables de Lyon. Semi-automatic fixed position machine for coiling down a cable. 4,523,724, Cl. 242-54.00R.
Resource Associates International Corp.: *See—*
Farber, Mark I., 4,523,993, Cl. 210-297.000.

Reuter, Herbert; Seiter, Wolfgang; and Wegener, Ingo, to Henkel Kommanditgesellschaft (KGaA). High-sudsing, granular detergent composition with greater granulate stability and process for its preparation. 4,524,010, Cl. 252-135.000.

Rhein-Chemie Rhein GmbH: *See*—
Bauer, Armin; Ehrend, Helfried; Morche, Klaus; Nutzel, Karl; and Sauerbier, Michael, 4,524,182, Cl. 525-120.000.

Rhone-Poulenc Industries: *See*—
Bigot, Bernard, 4,524,057, Cl. 423-555.000.
Exertier, Michel, 4,523,959, Cl. 127-46.200.

Richardson, Thomas: *See*—
Viswanathan, Tito; and Richardson, Thomas, 4,524,164, Cl. 524-14.000.

Richart, Jene A.; Beitler, Bradley D.; and Deeken, David G., to Exxon Production Research Co. Remotely replaceable guidepost method and apparatus. 4,523,878, Cl. 405-195.000.

Richey, Warren F.: *See*—
Tasset, Emmett L.; Dallessandro, Susan M.; and Richey, Warren F., 4,524,011, Cl. 252-171.000.

Richmond, Anthony J. C., to Lucas Industries public limited company. Method of manufacturing bearing blocks. 4,523,365, Cl. 29-527.400.

Ricoh Company, Ltd.: *See*—
Ejiri, Koichi, 4,524,454, Cl. 382-21.000.
Kakeno, Sadao; Ameyama, Minoru; Ichikawa, Kenichi; Umezawa, Michio; and Yamaguchi, Tomoyuki, 4,524,365, Cl. 346-75.000.
Ohzeki, Yoshiaki, 4,524,393, Cl. 358-257.000.

Riggi, Stephen J.; and Haszeldine, Robert N., to Pennwalt Corporation. 1-Cyano-3-(fluoroalkyl)guanidines for lowering blood pressure. 4,524,152, Cl. 514-609.000.

Riker Laboratories, Inc.: *See*—
Moore, George G. I., 4,524,210, Cl. 546-340.000.
Stern, Richard M., 4,524,148, Cl. 514-294.000.

Ringe, Thomas, to Mine Roof Support Systems, Inc. Lateral force system and support for supporting mine roofs. 4,523,881, Cl. 405-259.000.

Ritzl, Hermann. Glow discharge tube for spectral-analytical tests. 4,524,303, Cl. 315-111.810.

Ro-Search, Incorporated (Ro-Search): *See*—
Auberry, Horace; Liebscher, Anton; and Oberg, Sven, 4,523,346, Cl. 12-133.00R.

Robert Bosch GmbH: *See*—
Heinemann, Wolfgang; Noack, Rainer; and Weyl, Helmut, 4,524,038, Cl. 264-61.000.
Hofmann, Karl, 4,523,719, Cl. 239-533.120.
Latsch, Reinhard; Linder, Ernst; and Moser, Winfried, 4,523,559, Cl. 123-306.000.
Poetsch, Dieter, 4,524,392, Cl. 358-214.000.
Schulz, Axel; and Sochor, Josef, 4,524,396, Cl. 360-67.000.

Robinair Division: *See*—
Lower, Ralph C.; and Murray, Gary P., 4,523,897, Cl. 417-244.000.

Robinson, Allan F.; and Hunter, Warwick A., to Napintas Pty. Ltd. Latch. 4,523,385, Cl. 33-296.000.

Robinson, Wilfred R. Furniture construction. 4,523,787, Cl. 297-440.000.

Robot-Coupe, S.A.: *See*—
Behringer, John; and Martin, Pierre, 4,523,720, Cl. 241-37.500.

Rockwell International Corporation: *See*—
Barkhoudarian, Sarkis, 4,523,482, Cl. 73-862.360.
Moriarty, Michael P., 4,523,532, Cl. 110-347.000.
Rosman, Irwin E.; and Wagner, William R., 4,523,638, Cl. 165-167.000.
White, Stanley A., 4,524,424, Cl. 364-724.000.

Rodseth, William G.: *See*—
Peterson, Francis C.; Rodseth, William G.; and Spring, William A., 4,523,883, Cl. 411-171.000.

Roger Liot, S.A.: *See*—
Liot, Roger, 4,524,082, Cl. 426-312.000.
Liot, Roger, 4,524,083, Cl. 426-330.100.

Rogers, Douglas J., to Ferranti Limited. Position encoder. 4,524,347, Cl. 340-347.00P.

Rogers, Michael J.; and McMurtry, David R., to Renishaw Electrical Limited. Position sensing apparatus. 4,523,383, Cl. 33-558.000.

Rogers, Richard B.: *See*—
Arndt, Kim E.; McCormick, Ronald W.; and Rogers, Richard B., 4,523,940, Cl. 71-11.000.

Rohm and Haas Company: *See*—
Gleim, Robert D.; and de Grandpre, Mark P., 4,524,121, Cl. 430-176.000.

Rollin K. Daniel P.S.C.: *See*—
Daniel, Rollin K., 4,523,592, Cl. 128-334.00C.

Roope, Mary E. P. Light blocking panel for overhead projectors. 4,523,823, Cl. 353-97.000.

Roper Industries, Inc.: *See*—
Frey, Max, 4,523,900, Cl. 417-365.000.

Rosa, Aristheu A., to Preformed Line Products Company. Fitting for joining an elongate body to a support. 4,523,355, Cl. 24-115.00N.

Rosberg, Carl H.; and Rosberg, Hazel N. Apparatus for removing container caps. 4,523,497, Cl. 81-3.440.

Rosberg, Hazel N.: *See*—
Rosberg, Carl H.; and Rosberg, Hazel N., 4,523,497, Cl. 81-3.440.

Rosen, Bruce I.: *See*—
Qualeatti, Gail M.; Rosen, Bruce I.; Arena, Blaise J.; and Germanas, Dalia, 4,524,225, Cl. 568-885.000.

Rosen, Milton. One-piece building panel for walls and like structures. 4,523,415, Cl. 52-220.000.

Rosenbladt, Rudolf V.; Nenninger, Klaus; and Schussler, Rudolf, to Boehringer Mannheim GmbH. Medical test reaction area reflected light photometric device. 4,523,853, Cl. 356-446.000.

Rosman, Irwin E.; and Wagner, William R., to Rockwell International Corporation. Internally manifolded unibody plate for a plate/fin-type heat exchanger. 4,523,638, Cl. 165-167.000.

Ross, Bernd, deceased; Bickler, Donald B.; and Gallagher, Brian D., to United States of America, National Aeronautics and Space Administration. Increased voltage photovoltaic cell. 4,524,237, Cl. 136-261.000.

Rossi AG Wetzikon, Werkzeug- Und Spezialmaschinenbau: *See*—
Rossi, Claudio, 4,523,709, Cl. 228-48.000.

Rossi, Claudio, to Rossi AG Wetzikon, Werkzeug- Und Spezialmaschinenbau. Apparatus for aligning and supporting similar bodies. 4,523,709, Cl. 228-48.000.

Roth, Wilfred; and Meeker, C. Irving. Method and device for reversible sterilization in mammals. 4,523,590, Cl. 128-325.000.

Rotilio, James V. Adapter kit for tungsten-inert-gas torches. 4,524,260, Cl. 219-75.000.

Rouge, Francois. Multi-layer electric circuit board and blanks therefor. 4,524,239, Cl. 174-68.500.

Roustan, Max: *See*—
Lhenry, Bernard; and Roustan, Max, 4,523,896, Cl. 417-244.000.

Rozo, Rafael: *See*—
Wolf, Peter H.; Dobson, Thomas A.; and Rozo, Rafael, 4,524,259, Cl. 219-69.00R.

RSP Innovation Design Mfg., Inc.: *See*—
Pezzner, Richard S.; and Rader, George L., 4,523,888, Cl. 414-680.000.

Ruest, Dennis A.; Takano, Masaharu; and Wolf, Lawrence R., to Monsanto Company. Liquid 2-hydroxy-4-methylthiobutyric acid and process for the preparation thereof. 4,524,077, Cl. 514-557.000.

Rueter, John C., to Medtronic, Inc. Constant A-A interval control for DVI and DDD cardiac pacemakers. 4,523,593, Cl. 128-419.0PG.

Russo, Ronald D., to SIL-FAB Corporation. Surgical suction drain. 4,523,920, Cl. 604-93.000.

Rutten, Joseph; Hoeks, Gerardus P. F.; and van Kemenade, Johannes T. C., to U.S. Philips Corporation. Luminescent screen and lamp containing the same. 4,524,300, Cl. 313-487.000.

Rutter, Christopher C.: *See*—
Pongrass, Robert G.; and Rutter, Christopher C., 4,524,458, Cl. 383-33.000.

Ruxton, David S.: *See*—
Chalmers, Brian D.; Ruxton, David S.; and Miller, Kenneth L., 4,524,397, Cl. 360-77.000.

Rylicki, Edward J.: *See*—
Fathauer, George H.; Fowler, James M., Jr.; Rylicki, Edward J.; and Mason, Edwin E., 4,523,463, Cl. 73-204.000.

Ryu, Hideo, to Usui Kokusai Sangyo Kabushiki Kaisha. Metal and ceramic assembly. 4,523,554, Cl. 123-193.00C.

S.I.R.P. Studi Industriali Realizzazione Prototipi S.p.A.: *See*—
Sala, Silvio, 4,523,495, Cl. 74-714.000.

S.T. Chemical Co., Ltd.: *See*—
Yemoto, Jiichiro; Tarao, Ryokichi; and Yamamoto, Yoshio, 4,524,018, Cl. 252-522.00A.

Sabourin, Edward T.: *See*—
Bakshi, Kiran R.; Barie, Walter P.; and Sabourin, Edward T., 4,524,171, Cl. 524-376.000.

Sackett, James T. Filter assembly. 4,523,992, Cl. 210-232.000.

Sackmann, Gunter: *See*—
Himmelmann, Wolfgang; Sackmann, Gunter; and Meyer, Rudolf, 4,524,131, Cl. 430-523.000.

Saeki, Masaru: *See*—
Toyoshi, Seiji; Tanegawa, Tetsuo; Saeki, Masaru; and Kawakita, Tetsuya, 4,523,999, Cl. 210-639.000.

Saito, Shigemasa: *See*—
Kondo, Kazuo; Imamura, Seiji; Saito, Shigemasa; Akimoto, Mamoru; and Sunaga, Mitsuo, 4,523,711, Cl. 228-198.000.

Saito, Shoichi; and Shirako, Hideo, to Olympus Optical Co., Ltd. Tape cassette storage box coupling accessory. 4,523,680, Cl. 206-387.000.

Saito, Tadahiro: *See*—
Iwata, Atsushi; Kaneko, Takao; Ito, Akihiko; Saito, Tadahiro; and Fukui, Hirokazu, 4,524,333, Cl. 331-17.000.

Saito, Yuichi: *See*—
Yamamoto, Keisaku; Yoshida, Nobuyuki; Okamoto, Yasushi; Imai, Akio; Seki, Tomoaki; Furukawa, Hiroshi; and Saito, Yuichi, 4,523,618, Cl. 152-209.00R.

Sakagami, Yoshio; and Manabe, Hofumi. Novel proteinous cancer-cell proliferation inhibitory factors. 4,524,026, Cl. 260-112.00B.

Sakaguchi, Haruo; Seki, Norio; Yamamoto, Shu; and Okada, Akira, to Kokusai Denshin Denwa Kabushiki Kaisha. Unitary mounting structure for semiconductor laser and optical fiber. 4,523,802, Cl. 350-96.120.

Sakai, Hiromu; Ezaki, Sazo; and Kikuchi, Atsuo, to Toyoda Gosei Co., Ltd. Method and apparatus for continuously producing a core member of a trim. 4,523,448, Cl. 72-185.000.

Sakai, Tokuji: *See*—
Onodera, Tamio; Sakai, Tokuji; Yamasaki, Yasuo; and Sumitani, Koji, 4,524,055, Cl. 423-328.000.

Sakairi, Tadashi: *See*—
Maeda, Nobuhisa; Sakairi, Tadashi; and Wakahata, Tamotsu, 4,524,160, Cl. 523-200.000.

Sakano, Isao; Yokoyama, Tatsuro; Kajiya, Seitaro; Okazaki, Yutaka; Tokuda, Hiroshi; Kawazura, Hiroshi; Kumakura, Mikio; and Awaya, Akira, to Mitsui Toatsu Chemicals, Incorporated. Uracil derivatives,

process for preparing same, and pharmaceutical compositions comprising same. 4,524,147, Cl. 514-274.000.

Sakata, Mitsuya: *See—*
Yamazaki, Kaoru; Kurioka, Shunichiro; Sakata, Mitsuya; and Ogawa, Takahiro, 4,524,193, Cl. 526-79.000.

Sala, Silvio, to S.I.R.P. Studi Industriali Realizzazione Prototipi S.p.A. Differential assembly for distribution of torque between the front and rear axles of an automotive vehicle. 4,523,495, Cl. 74-714.000.

Sallot, Louis E.: *See—*
Bourlier, Claude P.; and Sallot, Louis E., 4,523,527, Cl. 109-19.000.

Samcoe Holding Corporation: *See—*
Diggle, Edmund A., Jr.; and Krajcovic, John, 4,523,389, Cl. 34-105.000.

Sammells, Anthony F.: *See—*
Ang, Peter G. P.; and Sammells, Anthony F., 4,523,981, Cl. 204-72.000.

Sampson, Christopher F.: *See—*
Wright, Christopher J.; and Sampson, Christopher F., 4,524,051, Cl. 423-247.000.

Samuels, George J.; Schmitkons, Thomas A.; Streeter, Terry L.; and Murray, Royce W., to Allied Corporation. Bifunctional air electrode. 4,524,114, Cl. 429-42.000.

Sandel, Bonnie B., to Olin Corporation. Selected alkylhydrazine and hydroxyalkylhydrazine adducts of diisocyanates and their use as antioxidants. 4,524,006, Cl. 252-51.50A.

Sands, Robert E.: *See—*
Daghe, Joseph L.; Sands, Robert E.; and Humes, Dennis W., 4,523,607, Cl. 137-218.000.

Sanjana, Zal N.: *See—*
Marchetti, Joseph R.; and Sanjana, Zal N., 4,524,107, Cl. 428-413.000.

Sankaran, Perumalagaram S.: *See—*
Wilson, Herbert C.; and Sankaran, Perumalagaram S., 4,523,640, Cl. 166-64.000.

Sano, Yumiko: *See—*
Maekawa, Kouji; Kato, Mamoru; Nakagama, Syoji; and Sano, Yumiko, 4,524,117, Cl. 430-44.000.

Sanofi: *See—*
Kan, Jean-Paul; Biziere, Kathleen; and Wermuth, Camille-Georges, 4,524,070, Cl. 514-230.000.

Sanol Schwarz GmbH: *See—*
Gockel, Karl-Heinz; Anhauser, Dieter; Hoffmann, Hans R.; and Reinhold, Karl-Heinz, 4,524,095, Cl. 428-43.000.

Sanshin Kogyo Kabushiki Kaisha: *See—*
Suzuki, Masayuki, 4,523,556, Cl. 123-196.00W.

Sanyo Chemical Industries, Ltd.: *See—*
Hagio, Shigeru; and Kawachi, Youji, 4,524,104, Cl. 428-341.000.

Sasaki, Itsuo: *See—*
Abou, Shouji; and Sasaki, Itsuo, 4,524,328, Cl. 330-253.000.

Sasaki, Yoshio: *See—*
Motosugi, Katsuhiko; and Sasaki, Yoshio, 4,523,560, Cl. 123-308.000.

Satanek, Joseph: *See—*
Glasgow, D. Gerald; and Satanek, Joseph, 4,524,190, Cl. 525-370.000.

Sato, Kunihiko: *See—*
Suzuki, Yukio; Sato, Kunihiko; and Muramatsu, Motoyasu, 4,523,570, Cl. 123-478.000.

Sato, Masaaki; Kaneda, Aizo; and Watanabe, Makio, to Hitachi, Ltd. Plastic information-recording medium. 4,524,369, Cl. 346-135.100.

Sato, Tadashi: *See—*
Arao, Kozo; and Sato, Tadashi, 4,523,803, Cl. 350-96.130.

Sauer, Gerhard; and Haffer, Gregor, to Schering Aktiengesellschaft. Process for the preparation of lysergic acid esters. 4,524,208, Cl. 546-69.000.

Sauerbier, Michael: *See—*
Bauer, Armin; Ehrend, Helfried; Morche, Klaus; Nutzel, Karl; and Sauerbier, Michael, 4,524,182, Cl. 525-120.000.

Sauter, Frederick J.: *See—*
Edwards, Larry D.; Sauter, Frederick J.; and Burgmaier, George J., 4,524,128, Cl. 430-353.000.

Sawa, Seiji; and Kita, Nobuyuki, to Minolta Camera Kabushiki Kaisha. Apparatus and method for measuring the intraocular pressure of an eyeball and auxiliary device for using therewith. 4,523,597, Cl. 128-652.000.

Sawabe, Mitsuo; and Imai, Kouichi, to Nihon Radiotor Co., Ltd.; and Toho Tekko Co., Ltd. Commutator for flat motor. 4,523,374, Cl. 29-597.000.

Sawaguchi, Tatsue: *See—*
Nobukawa, Akira; and Sawaguchi, Tatsue, 4,523,632, Cl. 165-47.000.

Scalzo, John P.; and Aileo, Jackson A., to Gentex Corporation. Earphone system for use in large-cavity earcups. 4,523,661, Cl. 181-129.000.

Schacht, Roy A. Marking and engraving machine. 4,523,865, Cl. 400-18.000.

Schaffer, James R., Jr., to Boeing Company, The. Compact laser simulator. 4,524,406, Cl. 362-32.000.

Schedel, John W.; and Lord, Richard G., to Carrier Corporation. Incrementally adjustable electronic expansion valve. 4,523,436, Cl. 62-222.000.

Scheibel, Horst; and Haug, Walter, to Karl Kassbohrer Fahrzeugwerke GmbH. Track former for cross country ski tracks with means to move former to transport position. 4,523,398, Cl. 37-220.000.

Scheibli, Peter, to Ciba-Geigy Corporation. Process for dyeing or printing cellulose textile fiber materials with reactive dyes containing fluoro-triazine. 4,523,925, Cl. 8-549.000.

Schenk, Gunther; Bergthaller, Peter; Heidenreich, Holger; and Wolfrum, Gerhard, to Agfa-Gevaert Aktiengesellschaft. Chelatable 4-thienyl imidazole azo dyes, their use in color photographic recording material. 4,524,123, Cl. 430-241.000.

Schering Aktiengesellschaft: *See—*
Sauer, Gerhard; and Haffer, Gregor, 4,524,208, Cl. 546-69.000.

Schiedegger, Charles E.; and Elfes, Vean, to Metamora Products Corp. Heat bonded composite plastic article and method and apparatus for making same. 4,524,096, Cl. 428-68.000.

Schild, Franz; and Weidenhaupt, Wolfgang, to Akzo NV. Reinforcement cable for elastomeric conduits. 4,523,425, Cl. 57-212.000.

Schildt, Walter C., to Dana Corporation. Variable pitch diameter torque sensing pulley assembly. 4,523,917, Cl. 474-19.000.

Schimmelpennink, Laurens M. H.; and Spaanenburg, Lambertus, to Moban B.V. System for power supply to and switching of a number of electrical appliances. 4,524,288, Cl. 307-40.000.

Schippers, Heinz; Hertell, Siegfried; and Eich, Otwin, to Barmag Barmer Maschinenfabrick AG. Control apparatus for a positive displacement reciprocating pump. 4,523,901, Cl. 417-395.000.

Schirmann, Francis, to Klein-Wanner Societe Anonyme. Process for the obtention of an algae beverage. 4,524,084, Cl. 426-590.000.

Schlosser, Erich J., to Weber-Stephen Products Co. Support structure for grill cover. 4,523,574, Cl. 126-25.00R.

Schlosser, Philip A.: *See—*
Quayle, Stanley F.; and Schlosser, Philip A., 4,523,654, Cl. 178-19.000.

Schlumberger Technology Corporation: *See—*
Hall, Robert L.; and Wood, Lowell T., 4,524,436, Cl. 367-169.000.
Johnson, David L., 4,524,432, Cl. 367-25.000.
Scott, Hubert D., 4,524,274, Cl. 250-269.000.

Schmaling, Roderick N.: *See—*
Pelda, Frederick J.; and Schmaling, Roderick N., 4,523,834, Cl. 355-3.0DD.

Schmidt, Gerhard; and Kohlpoth, Walter, to Nukem GmbH. Apparatus for compacting bioinjurious wastes. 4,524,048, Cl. 422-159.000.

Schmidt, Hans-Georg, to Dynamit Nobel AG. Method of preparing p-orsellinic acid esters. 4,524,216, Cl. 560-70.000.

Schmidt, Helmut: *See—*
Ong, Sienling; Karsunky, Ulrich; and Schmidt, Helmut, 4,523,922, Cl. 8-471.000.

Schmidt, Jimmy Q., to United States of America, Army. Ceramic coated differential sensor coil for use on a gun muzzle velocimeter. 4,524,323, Cl. 324-179.000.

Schmiedgen, Hans; Bernhardt, Siegfried; Strobl, Otto; and Menzel, Dietrich, to Spinnbau GmbH. Carder for manufacturing non-woven, formed fabric from fibrous substances. 4,523,350, Cl. 19-98.000.

Schmitkons, Thomas A.: *See—*
Samuels, George J.; Schmitkons, Thomas A.; Streeter, Terry L.; and Murray, Royce W., 4,524,114, Cl. 429-42.000.

Schnapper, Martin; and Hufendiek, Ernst W., to Daimler-Benz Aktiengesellschaft. Method for controlling the fuel metering for an internal combustion engine. 4,523,562, Cl. 123-357.000.

Schneider, Gerhart: *See—*
Mengel, Rudolf; Schroder, Ludwig; Stransky, Werner; Linden, Gerbert; Schneider, Gerhart; and Lust, Sigmund, 4,523,945, Cl. 71-92.000.

Schnitzer, Heinrich; and Wronka, Bodo, to Mannesmann Ag. Discharging molten metal from a smelting furnace. 4,523,747, Cl. 266-44.000.

Schoonmaker, Charles D.: *See—*
Bardsley, Robert F.; Finucane, Thomas P.; Hebel, Carl; Schoonmaker, Charles D.; Wruk, Philip J.; and Lee, Edward P., deceased, 4,524,078, Cl. 426-112.000.

Schoonover, Randall M.: *See—*
Scrivener, Thomas F.; and Schoonover, Randall M., 4,523,653, Cl. 177-147.000.

Schopf, Hans-Joachim: *See—*
Kizler, Wolfgang; Sieder, Wolfgang; Schopf, Hans-Joachim; Dobler, Helmut; and Gluck, Roland, 4,523,916, Cl. 464-98.000.

Schroder, Ludwig: *See—*
Mengel, Rudolf; Schroder, Ludwig; Stransky, Werner; Linden, Gerbert; Schneider, Gerhart; and Lust, Sigmund, 4,523,945, Cl. 71-92.000.

Schroter + Bake GmbH & Co., KG: *See—*
Schroter, Stefan, 4,523,675, Cl. 206-44.00R.

Schroter, Stefan, to Schroter + Bake GmbH & Co., KG. Collapsible display stand with attached tray. 4,523,675, Cl. 206-44.00R.

Schuh, Frank J., to Atlantic Richfield Company. Drainhole drilling assembly and method. 4,523,652, Cl. 175-61.000.

Schultz, William J.: *See—*
Adam, Randall E.; and Schultz, William J., 4,524,181, Cl. 525-107.000.

Schulz, Axel; and Sochor, Josef, to Robert Bosch GmbH. Playback preamplifier for magnetic tape recordings. 4,524,396, Cl. 360-67.000.

Schulz, David J.: *See—*
Paulson, John W.; and Schulz, David J., 4,524,115, Cl. 429-50.000.

Schulz, Donald N.: *See—*
Duvdevani, Ilan; Eckert, John A.; Schulz, Donald N.; and Kitano, Kissho, 4,523,929, Cl. 44-62.000.

Schulz, Kurt: *See—*
Biber, Klaus; Grunvogel, Karl; Lemcke, Ulrich; Jakubowski, Heinz; and Schulz, Kurt, 4,523,732, Cl. 248-123.100.

Schulz, Siegfried, to K. A. Schmersal GmbH & Co. Electrical switch. 4,524,251, Cl. 200-42.00R.

Schurmann, Heiner J., to American Ka-ro Corporation. Bottle holder. 4,523,677, Cl. 206-158.000.

Schurter, Rolf: *See—*
Fory, Werner; Gass, Karl; Meyer, Willy; and Schurter, Rolf, 4,523,944, Cl. 71-92.000.

Schussler, Rudolf: *See—*
Rosenbladt, Rudolf V.; Nenninger, Klaus; and Schussler, Rudolf, 4,523,853, Cl. 356-446.000.

Schwab, Richard J. Animal trail marker and scent container. 4,523,717, Cl. 239-56.000.

Schwankhart, Gerhard: *See—*
Sticht, Walter; and Schwankhart, Gerhard, 4,523,447, Cl. 72-144.000.

Schwartz, Robert A.; and Duchesneau, Jerome G., to United Technologies Corporation. Propeller pitch change actuation system. 4,523,891, Cl. 416-157.00R.

Schwartz, Robert W.: *See—*
Bottka, Nicholas; Schwartz, Robert W.; and Thun, Wayne E., 4,524,090, Cl. 427-53.100.

Schwarz, James. Wheel cover and retention clip. 4,523,789, Cl. 301-37.00P.

Schwarze, Werner: *See—*
Drauz, Karlheinz; Koban, Hans G.; Martens, Jurgen; and Schwarze, Werner, 4,524,211, Cl. 548-111.000.

Schwarzkopf, Daniel: *See—*
Sybel, Randall; and Schwarzkopf, Daniel, 4,524,345, Cl. 340-146.200.

Schwertfeger, Werner: *See—*
Millauer, Hans; Siegemund, Gunter; and Schwertfeger, Werner, 4,524,031, Cl. 260-456.00F.

Schwetz, Karl A.; Reinmuth, Klaus; Hunold, Klaus; and Isemann, Franz, to Elektroschmelzwerk Kempten GmbH. Substantially pore-free sintered polycrystalline articles of α-silicon carbide, boron carbide and free carbon and process for their manufacture. 4,524,138, Cl. 501-90.000.

Sciabbarrasi, Michael: *See—*
Kostanty, Raymond G.; Sciabbarrasi, Michael; and Grossman, Walter B., 4,524,461, Cl. 455-79.000.

Scientific-Atlanta, Inc.: *See—*
Brinegar, Billy W., 4,524,337, Cl. 333-28.00R.

SCM Corporation: *See—*
Player, Kenneth W.; and Wilson, Lonny L., 4,524,086, Cl. 426-607.000.

Scott, Eddie W.; and Seltzer, Errol N., to Collins & Aikman Corp. High temperature resistant sewing thread and method of making. 4,523,426, Cl. 57-247.000.

Scott, Edward A., to United States of America, Army. Thermal target display system. 4,524,386, Cl. 358-113.000.

Scott, Hubert D., to Schlumberger Technology Corporation. Methods and apparatus for investigating an earth formation and compensating for borehole environmental effects. 4,524,274, Cl. 250-269.000.

Scott Paper Company: *See—*
Laush, Frank I.; and Parker, Vernon L., 4,523,933, Cl. 55-97.000.

Scott, William B.: *See—*
Kindgren, Lee; Scott, William B.; and Voges, Robert W., 4,523,749, Cl. 269-32.000.

Scott, William R.; and Ih, Charles S., to United States of America, Navy. Laser generation of ultrasonic waveform reconstructions. 4,523,469, Cl. 73-603.000.

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Quayle, Stanley F.; and Schlosser, Philip A., 4,523,654, Cl. 178-19.000.

Scrivener, Thomas F.; and Schoonover, Randall M., to Frazier Precision Instrument Company, Inc.; and Holometrics, Inc. Load cell mass comparator. 4,523,653, Cl. 177-147.000.

Scrivens, George W., to Surgikos, Inc. Surgical gown. 4,523,335, Cl. 2-51.000.

Seager, Nigel J., to Whatman Reeve Angel Public Limited Company. Filter paper. 4,524,103, Cl. 428-338.000.

Searby, Anthony D.; and Walker, Ian C., to Quantel Limited. Computerized graphics system and method using an electronically synthesized palette. 4,524,421, Cl. 364-521.000.

Sebag, Henri; and Vanlerberghe, Guy, to L'Oreal. Surface-active polysiloxanes. 4,523,921, Cl. 8-405.000.

Sebesta, Gunter: *See—*
Gudat, Wolfgang; Klatt, Alfred; and Sebesta, Gunter, 4,523,513, Cl. 91-427.000.

Security Tag Systems, Inc.: *See—*
Charlot, Lincoln H., Jr., 4,523,356, Cl. 24-155.0BR.

Seely, James R., to Marketing Displays, Inc. Plastic biased poster frame. 4,523,400, Cl. 40-156.000.

Seeney, Charles E., to International Minerals & Chemical Corp. Process for preparing cores and molds. 4,524,053, Cl. 423-306.000.

Segu , Bruno: *See—*
Drisaldi, Giovanni; Fontana, Eugenio; Manetti, Virgilio; Segu , Franco; Segu , Sandro; and Segu , Bruno, 4,523,908, Cl. 433-8.000.

Segu , Franco: *See—*
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Sehnert, Steven D.; McClure, Gerald B.; and McPhee, William A., to Dresser Industries, Inc. Explosive safe/arm system for oil well perforating guns. 4,523,650, Cl. 175-4.560.

Seifried, Walter: *See—*
Walch, Axel; Seifried, Walter; Michel, Wolfgang; Kuhls, Jurgen; and Wildhardt, Juergen, 4,524,155, Cl. 521-64.000.

Seilly, Alec H.; and Murray, Andrew E., to Lucas Industries public limited company. Liquid fuel pumping apparatus. 4,523,569, Cl. 123-458.000.

Seiter, Wolfgang: *See—*
Reuter, Herbert; Seiter, Wolfgang; and Wegener, Ingo, 4,524,010, Cl. 252-135.000.

Seki, Norio: *See—*
Sakaguchi, Haruo; Seki, Norio; Yamamoto, Shu; and Okada, Akira, 4,523,802, Cl. 350-96.120.

Seki, Tomoaki: *See—*
Yamamoto, Keisaku; Yoshida, Nobuyuki; Okamoto, Yasushi; Imai, Akio; Seki, Tomoaki; Furukawa, Hiroshi; and Saito, Yuichi, 4,523,618, Cl. 152-209.00R.

Sekisui Kagaku Kogyo Kabushiki Kaisha: *See—*
Nishizaki, Tomoyoshi; Miyamoto, Minoru; Miyamoto, Kazuaki; Yoshida, Ken; Yamaji, Katsuhiko; and Nakata, Yasushi, 4,523,635, Cl. 165-104.120.

Sekiya, Mutsuo: *See—*
Tanaka, Hideharu; Sekiya, Mutsuo; and Uchikawa, Fusaoki, 4,523,662, Cl. 181-249.000.

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Uchida, Hiroyuki; Nagaki, Takehiro; Imakoshi, Shigeyoshi; Soda, Yutaka; Sugita, Junkichi; and Sekiya, Tetsuo, 4,524,401, Cl. 360-113.000.

Seltzer, Errol N.: *See—*
Scott, Eddie W.; and Seltzer, Errol N., 4,523,426, Cl. 57-247.000.

Semon, William J., to Casket Shells, Inc. Stamped casket. 4,523,358, Cl. 27-6.000.

Senatore, Guy: *See—*
Sherk, Fred T.; Nesheiwat, Afif M.; and Senatore, Guy, 4,524,200, Cl. 528-388.000.

Sengoku, Kouji: *See—*
Sugisawa, Ko; Yamamoto, Masanori; Shibuki, Masaru; Nomura, Yukihiro; Sengoku, Kouji; and Higashine, Seiji, 4,524,080, Cl. 426-236.000.

Seth, Siya V., to U.S. Philips Corporation. Washing machine motor speed control circuit. 4,524,403, Cl. 361-86.000.

Seufert, Frederick B., to Texaco Development Corporation. Liquefaction of coal. 4,523,986, Cl. 208-10.000.

Sevier, Peter E.: *See—*
Dantzig, Jonathan A.; Sevier, Peter E.; and Ungarean, Gary L., 4,523,624, Cl. 164-454.000.

Shadwick, David T., to International Business Machines Corporation. Ribbon feed cartridge. 4,523,868, Cl. 400-208.000.

Shafco Industries Inc.: *See—*
Miller, Ivan O., 4,523,608, Cl. 137-315.000.

Shapiro, L. Dennis, to Lifeline Systems, Inc. Personal alarm system. 4,524,243, Cl. 179-5.00R.

Sharp, Bruce R. External jacket system as secondary containment for storage tanks. 4,523,454, Cl. 73-49.200.

Sharp Kabushiki Kaisha: *See—*
Nishimura, Katsuji; and Yamamoto, Hachizou, 4,524,267, Cl. 235-379.000.
Nishimura, Toshio; and Morita, Akitaka, 4,523,858, Cl. 368-272.000.

Shasta Industries, Inc.: *See—*
Gould, Charles M.; and Blake, Andy F., 4,523,606, Cl. 137-119.000.

Shell Oil Company: *See—*
Clayfield, Eric J.; Dixon, Arnold G.; and Miller, Richard J. L., 4,524,000, Cl. 210-649.000.
Dejaifve, Pierre E.; and Quillaud, Gerard, 4,524,058, Cl. 423-656.000.
Feuerhahn, Martin P. O., 4,524,161, Cl. 523-414.000.
Hemphill, Dean P., 4,523,876, Cl. 405-158.000.
Johnson, Thomas H., 4,524,229, Cl. 585-463.000.
Poll, Ian, 4,523,529, Cl. 110-263.000.

Shelton, Mark A.: *See—*
Braybrook, George E.; Corby, David C.; Shelton, Mark A.; and Shelton, William E. A., 4,523,441, Cl. 68-5.00C.

Shelton, William E. A.: *See—*
Braybrook, George E.; Corby, David C.; Shelton, Mark A.; and Shelton, William E. A., 4,523,441, Cl. 68-5.00C.

Sheridon, Nicholas K.; and Berkovitz, Michael A., to Xerox Corporation. Modulation structure for fluid jet assisted ion projection printing apparatus. 4,524,371, Cl. 346-159.000.

Sherk, Fred T.; Nesheiwat, Afif M.; and Senatore, Guy, to Phillips Petroleum Company. Granular poly(arylene sulfide) recovery using evaporation. 4,524,200, Cl. 528-388.000.

Sherwin, Martin B.: *See—*
Wang, Shu-Chieh P.; and Sherwin, Martin B., 4,524,226, Cl. 562-948.000.

Sherwood Medical Company: *See—*
McCool, George W., 4,523,968, Cl. 156-73.500.

Shiba, Kazuo: *See—*
Yoshioka, Junichi; Koizumi, Koichi; Kanai, Akira; and Shiba, Kazuo, 4,523,410, Cl. 51-166.00R.

Shibata, Akira; Komatsu, Keiichi; Kuroyanagi, Tomomitsu; and Kojima, Noboru, to Hitachi, Ltd. Chroma signal recording and reproducing circuit. 4,524,380, Cl. 358-316.000.

Shibuki, Masaru: *See—*
Sugisawa, Ko; Yamamoto, Masanori; Shibuki, Masaru; Nomura, Yukihiro; Sengoku, Kouji; and Higashine, Seiji, 4,524,080, Cl. 426-236.000.
Shigemura, Yutaka: *See—*
Hisajima, Masahiko; Kimura, Hiroshi; Shigemura, Yutaka; Yada, Isao; Irie, Yoichiro; Morimoto, Kiyoshi; and Nagashima, Takashi, 4,523,754, Cl. 271-264.000.
Shima, Ichiji; Yoshibayashi, Shigeru; and Taniguti, Ryosuke, to Mitsubishi Denki Kabushiki Kaisha; Shima, Ichiji; and Yoshibayashi, Shigeru. Abnormal vibration monitor. 4,524,355, Cl. 340-870.130.
Shimadzu Corporation: *See—*
Kadota, Toshimi; Suzuki, Jugoro; and Matsui, Shigeki, 4,523,484, Cl. 73-864.120.
Shono, Toshiyuki; Kimura, Keiichi; and Maeda, Takumi, 4,523,994, Cl. 210-500.200.
Shimano Industrial Company Limited: *See—*
Shimano, Keizo, 4,523,492, Cl. 74-594.400.
Shimano, Keizo, to Shimano Industrial Company Limited. Pedal for a bicycle. 4,523,492, Cl. 74-594.400.
Shimanuki, Koji: *See—*
Nishizawa, Junichi; Tamamushi, Takashige; Shimanuki, Koji; and Inuiya, Masafumi, 4,524,391, Cl. 358-213.000.
Shimizu, Noriyuki: *See—*
Shimizu, Tadao; Shimizu, Noriyuki; and Harada, Shoji, 4,524,098, Cl. 428-156.000.
Shimizu, Tadao; Shimizu, Noriyuki; and Harada, Shoji, 4,524,100, Cl. 428-283.000.
Shimizu, Tadao; Shimizu, Noriyuki; and Harada, Shoji, to Nikkan Industries Co., Ltd. Board for additive circuits. 4,524,098, Cl. 428-156.000.
Shimizu, Tadao; Shimizu, Noriyuki; and Harada, Shoji, to Nikkan Industries Co., Ltd. Inorganic composite and the preparation thereof. 4,524,100, Cl. 428-283.000.
Shimizu, Yoichi, to Kabushiki Kaisha Maruyama Seisakucho. Apparatus for detection of end breakage in heddle frame. 4,523,614, Cl. 139-355.000.
Shimura, Yoshimasa; Kakiuchi, Hideyuki; Minamikawa, Yoshihisa; and Kawasaki, Katsuhiro, to Hitachi, Ltd. Charged particle beam apparatus. 4,524,277, Cl. 250-397.000.
Shindow, Yoshio: *See—*
Oka, Joji; Iwakura, Hideaki; Ando, Narumi; Iwasaki, Kiyotoshi; and Shindow, Yoshio, 4,524,111, Cl. 428-551.000.
Shinn, Dennis B.: *See—*
Jenkins, Robert G.; and Shinn, Dennis B., 4,523,939, Cl. 65-32.000.
Shirako, Hideo: *See—*
Saito, Shoichi; and Shirako, Hideo, 4,523,680, Cl. 206-387.000.
Shirley, Ian M.: *See—*
Ballard, Denis G. H.; Courtis, Andrew; and Shirley, Ian M., 4,524,198, Cl. 526-292.100.
Shono, Toshiyuki; Kimura, Keiichi; and Maeda, Takumi, to Shimadzu Corporation. Bis-crown-ether derivatives and their use. 4,523,994, Cl. 210-500.200.
Sidell, Richard S.: *See—*
Headlund, Larry M.; Marksteiner, Gary J.; and Sidell, Richard S., 4,524,419, Cl. 364-474.000.
Sieder, Wolfgang: *See—*
Kizler, Wolfgang; Sieder, Wolfgang; Schopf, Hans-Joachim; Dobler, Helmut; and Gluck, Roland, 4,523,916, Cl. 464-98.000.
Siegemund, Gunter: *See—*
Millauer, Hans; Siegemund, Gunter; and Schwertfeger, Werner, 4,524,031, Cl. 260-456.00F.
Sielaff, Ulrich, to United Steel Products Company. Hanger bracket and method of using same. 4,523,412, Cl. 52-81.000.
Siemens Aktiengesellschaft: *See—*
Baumgartner, Werner; Krockow, Dieter; and Tihany, Jeno , 4,524,375, Cl. 357-30.000.
Brajder, Antonio; and Hantke, Klaus, 4,524,334, Cl. 331-135.000.
Sievert, Steven A.: *See—*
Allen, Edwin M.; Foust, Eugene C.; Sievert, Steven A.; Fitzgerald, William C.; and Moffitt, Max L., 4,523,842, Cl. 356-124.000.
Signetics Corporation: *See—*
Burgyan, Lajos, 4,524,330, Cl. 330-257.000.
SIL-FAB Corporation: *See—*
Russo, Ronald D., 4,523,920, Cl. 604-93.000.
Silva, Ethan A. Fluid intensifier. 4,523,895, Cl. 417-225.000.
Silverman, Daniel. Method for determining the azimuth and length of a deep vertical fracture in the earth. 4,524,434, Cl. 367-37.000.
Simmons, Jerry C.: *See—*
Strickler, Steven E.; Simmons, Jerry C.; Golladay, James; and Goldstein, Andrew D., 4,523,460, Cl. 73-200.000.
Simmons, Nathaniel; Puccini, Sergio E.; Magnusson, Stig E.; and Parikh, Kamal I., to GTE Automatic Electric Inc. Modular space stage arrangement for a T-S-T digital switching system. 4,524,441, Cl. 370-63.000.
Simmons, Nathaniel; Puccini, Sergio E.; Magnusson, Stig E.; and Parikh, Kanal I., to GTE Automatic Electric Inc. Modularly expandable space stage for a T-S-T digital switching system. 4,524,442, Cl. 370-63.000.
Simmons U.S.A. Corporation: *See—*
Stumpf, Walter; and Dillon, Paul, 4,523,344, Cl. 5-477.000.
Sinar AG Schaffhausen: *See—*
Gfeller, Karl; and Datwyler, Peter, 4,523,824, Cl. 354-161.000.
Singh, Baldev: *See—*
Lesher, George Y.; and Singh, Baldev, 4,524,149, Cl. 514-350.000.
Sinha, Hari N.: *See—*
George, Christopher W.; Sinha, Hari N.; Vujcich, Mary R.; and Walker, Graham S., 4,524,054, Cl. 423-308.000.
Sinn, Robert: *See—*
Pichat, Philippe; Niel, Michel; and Sinn, Robert, 4,523,954, Cl. 106-110.000.
Sit, Song-P., to Zimpro Inc. Process for concurrent steam generation and metal recovery. 4,524,049, Cl. 423-65.000.
Slamecka, Ernst. High-voltage gas-blast puffer type circuit-breaker. 4,524,257, Cl. 200-148.00A.
Sling-All Ltd.: *See—*
O'Neill, Hugh, 4,523,526, Cl. 108-149.000.
Sloan, Jerry L.: *See—*
Julian, John C.; Sloan, Jerry L.; and Wheeler, Lee A., 4,523,503, Cl. 83-403.000.
Sluyterman, Albertus A. S., to U.S. Philips Corporation. Device for displaying television pictures. 4,524,340, Cl. 335-212.000.
Smith, David A., to APV Company Limited. Valve operating cylinder unit. 4,523,515, Cl. 92-59.000.
Smith, Donald L. Retractable conveyor belt. 4,523,669, Cl. 198-313.000.
Smith, Donald P.; and Plumb, William W., to Smith, Donald P. High efficiency impingement heating and cooling apparatus. 4,523,391, Cl. 34-225.000.
Smith, Edward F., III: *See—*
Haque, Reza; and Smith, Edward F., III, 4,524,089, Cl. 427-38.000.
Smith, Peter J.: *See—*
Moss, Keith G.; Smith, Peter J.; and Woolhouse, Robin A., 4,523,984, Cl. 204-296.000.
Smoot, Mark H. Energy efficient power driven marine vessel boat. 4,523,536, Cl. 114-67.00R.
Smyth, Robert R., to Eaton Corporation. Throttle modulation mechanism. 4,523,667, Cl. 192-0.092.
Snyder, David E., to Axelson, Inc. Pressure controller. 4,523,602, Cl. 137-467.000.
Soares, Gloria M. G.: *See—*
Abdel-Hehim, Hossam A. A.; Coelho, Wagner C.; and Soares, Gloria M. G., 4,523,941, Cl. 71-37.000.
Sochor, Josef: *See—*
Schulz, Axel; and Sochor, Josef, 4,524,396, Cl. 360-67.000.
Societa Cavi Pirelli S.p.A.: *See—*
Strada, Francesco; and Bazzi, Giuseppe, 4,523,648, Cl. 174-26.00R.
Societe Anonyme dite-les Cables de Lyon: *See—*
Rerolle, Yves, 4,523,724, Cl. 242-54.00R.
Societe de Vente de L'Aluminium Pechiney: *See—*
Cans, Yves; Gonda, Richard; and Tavernier, Marc, 4,523,627, Cl. 164-467.000.
Societe En Nom Collectif: *See—*
Bizard, Andre , 4,523,634, Cl. 165-95.000.
Societe Industrielle Bertrand Faure: *See—*
Letournoux, Alain; and Courtois, Bernard, 4,523,786, Cl. 297-367.000.
Societe Laitiere de Veron: *See—*
Denisot, Bernard A., 4,523,439, Cl. 62-251.000.
Societe Manzoni-Bouchot: *See—*
Manzoni, Stephane, 4,523,736, Cl. 248-483.000.
Societe Pour L'etude et la Fabrication des Circuits Integres Speciaux E.F.C.I.S.: *See—*
Bertails, Jean C., 4,524,425, Cl. 364-825.000.
Societe Suisse pour l'Industrie Horlogere Management Services: *See—*
Gygax, Claude-Andre , 4,523,856, Cl. 368-72.000.
Soda, Yutaka: *See—*
Uchida, Hiroyuki; Nagaki, Takehiro; Imakoshi, Shigeyoshi; Soda, Yutaka; Sugita, Junkichi; and Sekiya, Tetsuo, 4,524,401, Cl. 360-113.000.
Sogah, Dotsevi Y.: *See—*
Farnham, William B.; and Sogah, Dotsevi Y., 4,524,196, Cl. 526-190.000.
Solvay & Cie. (Societe Anonyme): *See—*
Dumoulin, Joseph, 4,524,194, Cl. 526-84.000.
Solyntjes, Alan J.: *See—*
Nepper, Robert F.; Solyntjes, Alan J.; and Abrahamson, Carl W., 4,523,836, Cl. 355-16.000.
Sony Corporation: *See—*
Okada, Takashi; Ikeda, Yasunari; and Tanaka, Yutaka, 4,524,379, Cl. 358-11.000.
Suzuki, Manabu, 4,524,308, Cl. 315-368.000.
Tanaka, Yutaka; and Okada, Takashi, 4,524,382, Cl. 358-31.000.
Uchida, Hiroyuki; Nagaki, Takehiro; Imakoshi, Shigeyoshi; Soda, Yutaka; Sugita, Junkichi; and Sekiya, Tetsuo, 4,524,401, Cl. 360-113.000.
Ueda, Sachio; Toriyama, Shigehiro; and Matsushita, Yuichi, 4,524,402, Cl. 360-130.240.
Sony Magnescale Incorporation: *See—*
Narimatsu, Akihisa; and Ohkubo, Hiroyuki, 4,523,381, Cl. 33-125.00C.
Sorenson, Richard W., to Carlingswitch, Inc. Three position switch construction. 4,524,253, Cl. 200-68.200.
Soubry, Garry V.; and MacFarlane, James L. Safety descent device. 4,523,664, Cl. 182-233.000.
Spaanenburg, Lambertus: *See—*
Schimmelpennink, Laurens M. H.; and Spaanenburg, Lambertus, 4,524,288, Cl. 307-40.000.
Spacesaver Corporation: *See—*
Peterman, Robert J., 4,523,794, Cl. 312-201.000.
Spangler, Richard A., to Procter & Gamble Company, The. Disposable bib having tape-tab fastener. 4,523,333, Cl. 2-49.00R.

Sparks, Gregory E.; and Larson, David A., to Deere & Company. Steering pressure responsive differential lock control system. 4,523,494, Cl. 74-710.500.

Spector, Donald. Aroma-dispensing cartridge and holder assembly for automobiles. 4,523,870, Cl. 98-2.110.

Speidell, James L.: *See*—
Cuomo, Jerome J.; Harper, James M. E.; Kaufman, Harold R.; and Speidell, James L., 4,523,971, Cl. 156-345.000.

Spencer, Harvey J., to Paper Converting Machine Company. Method and apparatus for manufacturing a product having elastic means disposed in a direction transverse to product movement. 4,523,969, Cl. 156-161.000.

Spencer Wright Industries, Inc.: *See*—
Aldridge, R. Warren, Jr., 4,523,499, Cl. 82-4.00A.

Sperry Corporation: *See*—
Chase, Karl L., 4,524,353, Cl. 340-732.000.
Crocker, David R.; Stelling, Desi D.; and Larson, Francis W., 4,524,443, Cl. 370-112.000.

Spinnbau GmbH: *See*—
Schmiedgen, Hans; Bernhardt, Siegfried; Strobl, Otto; and Menzel, Dietrich, 4,523,350, Cl. 19-98.000.

Spivack, John D.; and Pastor, Stephen D., to Ciba-Geigy Corporation. Primary or secondary amino substituted dibenzo dioxaphosphepins and dioxaphosphocins. 4,524,166, Cl. 524-117.000.

Spivack, John D.; and Pastor, Stephen D., to Ciba-Geigy Corporation. Polymeric hindered phosphonate stabilizers. 4,524,167, Cl. 524-121.000.

Spletzer, Barry; Swiatlowski, George J.; and Brandt, Maurice W., to Gerber Products Company. Baby bottle cap assembler. 4,523,377, Cl. 29-773.000.

Sprecker, Mark A.; Belko, Robert P.; Van Loveren, Augustinus G.; and Hanna, Marie R., to International Flavors & Fragrances Inc. Isopropyl substituted cyclohexenyl methyl ketones and perfumery uses thereof. 4,524,020, Cl. 252-522.00R.

Sprecker, Mark A.: *See*—
Wiegers, Wilhelmus J.; and Sprecker, Mark A., 4,524,021, Cl. 252-522.00R.

Spring, William A.: *See*—
Peterson, Francis C.; Rodseth, William G.; and Spring, William A., 4,523,883, Cl. 411-171.000.

Spurlock, Richard: *See*—
Christianson, Charles L.; and Spurlock, Richard, 4,524,279, Cl. 250-497.100.

Sputtered Films, Inc.: *See*—
Dimock, Jack A., 4,523,985, Cl. 204-298.000.

Square D Company: *See*—
Chabot, Ferdinand E., 4,524,339, Cl. 335-22.000.

Staerzl, Richard E., to Brunswick Corporation. Fuel flow monitor for an electronic fuel injection circuit. 4,523,572, Cl. 123-494.000.

Stambaugh, Edgel: *See*—
Hillman, Melville E. D.; Huffman, William J.; Lipinsky, Edward S.; and Stambaugh, Edgel, 4,523,928, Cl. 44-56.000.

Stamberger, Paul, to Union Carbide Corporation. Adducts and polymer-polyols useful in the preparation of improved plastics, including polyurethane foams, elastomers and the like. 4,524,157, Cl. 521-156.000.

Standard Oil Company (Indiana): *See*—
Broding, Robert A., 4,524,433, Cl. 367-25.000.

Standex International Corporation: *See*—
Ekholm, Carl R., 4,523,581, Cl. 128-70.000.

Stanley Electric Co., Ltd.: *See*—
Ikenoue, Tsuneo; Liu, Shin-yng; Arai, Naoki; and Umemoto, Shuichi, 4,524,413, Cl. 363-127.000.

Stanley, Frederick W., Jr., to Dow Chemical Company, The. Water-in-oil emulsions of hydrophobe association polymers. 4,524,175, Cl. 524-831.000.

Stanley, Philip E.; and Szorc, Piotr, to Honeywell Information Systems Inc. Stack mechanism with the ability to dynamically alter the size of a stack in a data processing system. 4,524,416, Cl. 364-200.000.

Staubli-Verdol: *See*—
Mutschler, Ulrich, 4,523,915, Cl. 464-3.000.

Stauffer Chemical Company: *See*—
Brokke, Mervin E.; and Magee, Walter L., Jr., 4,524,214, Cl. 560-51.000.

Steen, Gunnar, to Stifab AB. Measurement unit for determining gas flow through a conduit and measuring means designed to be included in such a measuring unit. 4,523,481, Cl. 73-861.610.

Stefansson, Thorvardur S.: *See*—
Johansen, Claus J.; Jark, Jens K.; and Stefansson, Thorvardur S., 4,523,739, Cl. 251-139.000.

Steinbeck, Herbert: *See*—
Dorsch, Heinz; Hofbauer, August; and Steinbeck, Herbert, 4,523,568, Cl. 123-453.000.

Steinberger, Helmut; Kirschnek, Helmut; and Pfeiffer, Josef, to Bayer Aktiengesellschaft. Preparation of aqueous silicone dispersions for treating textiles. 4,524,172, Cl. 524-506.000.

Steinhagen, Wolfgang: *See*—
Bosserhoff, Hartmut; Steinhagen, Wolfgang; and Joeres, Ulrich, 4,524,346, Cl. 340-347.0CC.

Stella, Leo, to Torrington Company, The. Bearing with a lubrication fitting. 4,523,861, Cl. 384-475.000.

Stelling, Desi D.: *See*—
Crocker, David R.; Stelling, Desi D.; and Larson, Francis W., 4,524,443, Cl. 370-112.000.

Stephens, James B.: *See*—
Miller, Charles G., deceased; Stephens, James B.; and Youngberg, Charles, 4,523,808, Cl. 350-146.000.

Sterling Drug Inc.: *See*—
Lesher, George Y.; and Singh, Baldev, 4,524,149, Cl. 514-350.000.
Paikoff, Myron; Hain, Robert W.; and Hadtke, Frederick B., 4,523,679, Cl. 206-370.000.

Stern, Richard M., to Riker Laboratories, Inc. Antimicrobial 8,9-dihalobenzo[ij]quinolizine carboxylic acids. 4,524,148, Cl. 514-294.000.

Stevens, Gregory A.: *See*—
Hefner, Robert E., Jr.; Martin, Patrick H.; and Stevens, Gregory A., 4,524,178, Cl. 525-28.000.

Sticht, Walter; and Schwankhart, Gerhard, to Stiwa-Fertigungstechnik Sticht Gesellschaft m.b.H. Wire coiler. 4,523,447, Cl. 72-144.000.

Stifab AB: *See*—
Steen, Gunnar, 4,523,481, Cl. 73-861.610.

Still GmbH: *See*—
Kremer, Manfred, 4,524,286, Cl. 290-45.000.

Sting, Donald W.: *See*—
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Kovalsky, Stephen J., 4,523,952, Cl. 106-20.000.
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Couri, Mark S., 4,523,586, Cl. 128-82.000.
Surgikos, Inc.: *See*—
Scrivens, George W., 4,523,335, Cl. 2-51.000.
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Yanagisawa, Taminori; Yamaguchi, Takaharu; and Fukatsu, Hiroshi, 4,523,670, Cl. 198-403.000.
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Takiron Co., Ltd.: *See*—
Miki, Shinji; Nishio, Toyokazu; Matsuyama, Shinzo; and Yamazaki, Shinichi, 4,523,874, Cl. 405-43.000.
Tamamushi, Takashige: *See*—
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Tames, Esther R. Disposable floor mop. 4,523,347, Cl. 15-104.940.
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TDK Corporation: *See—*
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Onodera, Tamio; Sakai, Tokuji; Yamasaki, Yasuo; and Sumitani, Koji, 4,524,055, Cl. 423-328.000.

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Tektronix, Inc.: *See—*
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Temple, Russell A.; Wesseler, Martin G.; Harper, David C.; Eiland, Harry F.; and Tellkamp, Robert G., 4,523,837, Cl. 355-51.000.

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Ang, Peter G. P.; and Sammells, Anthony F., 4,523,981, Cl. 204-72.000.
McCoy, David R.; and Naylor, Carter G., 4,524,023, Cl. 252-548.000.
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Evans, Thomas E., 4,523,378, Cl. 29-881.000.
Farrell, Charles F., 4,524,249, Cl. 200-5.00A.
Haken, Roger A.; and Feger, William E., 4,524,431, Cl. 365-222.000.
Penz, Perry A., 4,523,812, Cl. 350-334.000.

Thevis, Paul; Danner, Helmut; and Weisser, Erich, to Heckler & Koch GmbH. Shoulder arm. 4,523,509, Cl. 89-129.020.

Thibault, William C.; and Pate, Paul E., to General Electric Company. Method for sealing a rechargable cell. 4,523,376, Cl. 29-623.200.

Thiel, Philip P.: *See—*
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Thomas, Bobby J.: *See—*
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Thomas, Robert F.: *See—*
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Thompson, Douglas K., to General Motors Corporation. End seal for turbine blade base. 4,523,890, Cl. 416-95.000.

Thompson, James P.: *See—*
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Thompson, Robert E., to Chevron Research Company. Armored optical fiber cable. 4,523,804, Cl. 350-96.230.

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Thurlow, John F., to Dennison Manufacturing Company. Transfer coating methods, compositions and products. 4,523,956, Cl. 106-243.000.

Thurston, Marlin O., to R. H. Burton Company. Refractor with optically encoded cylinder axis position. 4,523,822, Cl. 351-234.000.

Tiedemann, George V. Three-in-one work station. 4,523,617, Cl. 144-286.00A.

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Titchenal, Oliver R., to Basic Packaging Systems, Inc. Square ended bag. 4,524,459, Cl. 383-37.000.

Titov, Mikhail Y.: *See—*
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Todd, Carl D., to Gateway Scientific, Inc. Smoke alarm activated light. 4,524,304, Cl. 315-156.000.

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Tohoku University: *See—*
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Tokuda, Hiroshi: *See—*
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Tokyo Electric Co., Ltd.: *See—*
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Aoki, Masayuki, 4,524,258, Cl. 219-10.55B.
Fujiki, Masao, 4,524,398, Cl. 360-78.000.
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Harada, Nozomu; Ito, Hiroshi; and Adachi, Toshikazu, 4,523,544, Cl. 118-702.000.
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Kawakatsu, Akira; and Yamamoto, Fumio, 4,524,410, Cl. 362-255.000.
Masuda, Eiji; and Matsuo, Kenji, 4,524,327, Cl. 330-253.000.
Nagakubo, Yoshihide, 4,523,369, Cl. 29-576.00W.
Nagano, Katsumi, 4,524,292, Cl. 307-494.000.
Nakayama, Shouji; Takanashi, Yukio; Higuchi, Toshiharu; and Yakabe, Touru, 4,524,296, Cl. 313-270.000.
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Toman, George M., to Union Special Corporation. Force transfer means. 4,523,533, Cl. 112-199.000.

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Negishi, Takao; Kojima, Teiryo; and Tomiita, Kazuo, 4,523,428, Cl. 57-288.000.

Tomita, Masahiro: *See—*
Takagi, Shigeru; and Tomita, Masahiro, 4,523,935, Cl. 55-282.000.

Tomori, Yasumasa, to Asahi Kogaku Kogyo Kabushiki Kaisha. Zcom lens barrel for macrofocusing. 4,523,815, Cl. 350-430.000.

Tong, Curtis M.: *See—*
Pedersen, David R.; and Tong, Curtis M., 4,523,464, Cl. 73-216.000.

Toray Industries, Inc.: *See—*
Negishi, Takao; Kojima, Teiryo; and Tomiita, Kazuo, 4,523,428, Cl. 57-288.000.

Toriyama, Shigehiro: *See—*
Ueda, Sachio; Toriyama, Shigehiro; and Matsushita, Yuichi, 4,524,402, Cl. 360-130.240.

Torrington Company, The: *See—*
Cuozzo, Anthony; and Achee, John D., 4,523,362, Cl. 29-148.40A.
Stella, Leo, 4,523,861, Cl. 384-475.000.

Touhalisky, John: *See*—
Derkacs, Thomas; Matay, Istvan M.; Murphy, Stephan D.; and Touhalisky, John, 4,523,468, Cl. 73-598.000.
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Reeves, Jerry L., 4,523,886, Cl. 414-641.000.
Toy, Lester T., to Raychem Corporation. Process for manufacturing sealant coated articles. 4,523,970, Cl. 156-244.110.
Toyoda Gosei Co., Ltd.: *See*—
Sakai, Hiromu; Ezaki, Sazo; and Kikuchi, Atsuo, 4,523,448, Cl. 72-185.000.
Toyoshi, Seiji; Tanegawa, Tetsuo; Saeki, Masaru; and Kawakita, Tetsuya, to Ajinomoto Co., Inc. Ultrafiltration method. 4,523,999, Cl. 210-639.000.
Toyota Jidosha Kabushiki Kaisha: *See*—
Asano, Masumi; Ugajin, Mitsuyuki; and Isogai, Kiyoshi, 4,523,763, Cl. 277-1.000.
Kobayashi, Tatsuo, 4,523,566, Cl. 123-425.000.
Mizutani, Shinichi; and Ajiki, Harumi, 4,523,363, Cl. 29-235.000.
Suganuma, Tetsuya; Kazuoka, Koji; Fujita, Shuichi; Takahashi, Yoshitaka; Ueda, Katsuhiko; and Nakamura, Hitoshi, 4,524,046, Cl. 419-8.000.
Suzuki, Yukio; Sato, Kunihiko; and Muramatsu, Motoyasu, 4,523,570, Cl. 123-478.000.
Yanagisawa, Taminori; Yamaguchi, Takaharu; and Fukatsu, Hiroshi, 4,523,670, Cl. 198-403.000.
Yoshida, Hatsuyoshi; Fukutome, Michio; Ohuchi, Makoto; and Ohta, Jyun, 4,524,254, Cl. 200-83.00R.
Toyota Jidosha Kogyo Kabushiki Kaisha: *See*—
Motosugi, Katsuhiko; and Sasaki, Yoshio, 4,523,560, Cl. 123-308.000.
Transaction Security, Inc.: *See*—
Hastings, Otis H.; and Hastings, Otis M., 4,523,528, Cl. 109-42.000.
Triumph-Adler A.G. fur Buro- und Informationstechnik: *See*—
Hirzinger, Peter; and Vatterott, Karl-Heinz, 4,523,866, Cl. 400-124.000.
Truman, Charles L., to Kimberly-Clark Corporation. Method for manufacture of sleeved garments outside out. 4,523,336, Cl. 2-69.000.
Trutzschler GmbH & Co. KG: *See*—
Leifeld, Ferdinand, 4,523,351, Cl. 19-105.000.
TRW Inc.: *See*—
Derkacs, Thomas; Matay, Istvan M.; Murphy, Stephan D.; and Touhalisky, John, 4,523,468, Cl. 73-598.000.
TSI Incorporated: *See*—
Kolodjski, Kenneth J., 4,523,462, Cl. 73-204.000.
Tsubouchi, Natsuro: *See*—
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Tsuda, Kiyoshi: *See*—
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Tsuji, Shintaro: *See*—
Araya, Shinji; and Tsuji, Shintaro, 4,524,418, Cl. 364-436.000.
Tsujikawa, Teruaki: *See*—
Kishimoto, Shinzo; Ohno, Shigeru; and Tsujikawa, Teruaki, 4,524,129, Cl. 430-393.000.
Tsukakoshi, Naoto: *See*—
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Tsukamoto, Tatuzo. Clip for sheet material. 4,523,354, Cl. 24-67.900.
Tsumura, Katsunori: *See*—
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Tsuya, Noboru; Arai, Kenichi; and Takeuchi, Toshio, to Tohoku University. Process of producing silicon ribbon with p-n junction. 4,523,966, Cl. 148-171.000.
Turba, Egon. Surface for sports areas, particularly tennis courts, and its manufacture. 4,523,755, Cl. 272-3.000.
Tureaud, Aloysius K. Apparatus for treating human feet. 4,523,580, Cl. 128-52.000.
Turko, John W.: *See*—
Engel, Larry J.; and Turko, John W., 4,523,548, Cl. 123-1.00A.
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Twiehoff, Karl-Heinz; and Nowag, Reinhard, to Windmoller & Holscher. Valved sack. 4,524,460, Cl. 383-45.000.
Tyhach, Richard J., to Miles Laboratories, Inc. Test device for lactase activity in a meconium sample. 4,524,133, Cl. 435-14.000.
U.S.D. Corp: *See*—
Faulconer, Mark; and Langton, Allan R., 4,523,914, Cl. 441-108.000.
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Uchida, Hiroyuki; Nagaki, Takehiro; Imakoshi, Shigeyoshi; Soda, Yutaka; Sugita, Junkichi; and Sekiya, Tetsuo, to Sony Corporation. Magnetic transducer head utilizing magneto resistance effect with a bias field and partial saturation. 4,524,401, Cl. 360-113.000.
Uchida, Yoshihiro: *See*—
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Ugajin, Mitsuyuki: *See*—
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Ulrich, Jorn: *See*—
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Erme, Enn K.; Lepasaar, Tiit P.; Ummer, Jury E.; and Kink, Rein A., 4,523,845, Cl. 356-333.000.
Ungarean, Gary L.: *See*—
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Barber, Alan G., 4,524,158, Cl. 523-130.000.
Barber, Alan G., 4,524,159, Cl. 523-177.000.
Barnabeo, Austin E.; and Keogh, Michael J., 4,524,201, Cl. 528-395.000.
Domeier, Linda A., 4,524,162, Cl. 523-438.000.
Kaiser, Steven W., 4,524,234, Cl. 585-638.000.
McCain, James H., 4,524,236, Cl. 585-658.000.
Stamberger, Paul, 4,524,157, Cl. 521-156.000.
Taylor, Glenn A.; and Wolf, Philip F., 4,524,224, Cl. 568-858.000.
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Stone, William J., 4,523,849, Cl. 356-369.000.
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Breckinridge, James B.; and O'Callaghan, Fred G., 4,523,846, Cl. 356-346.000.
Chandler, Joseph A., 4,523,741, Cl. 251-325.000.
Goss, Willis C.; Nelson, Mark D.; and McLauchlan, John M., 4,523,810, Cl. 350-320.000.
Ross, Bernd, deceased; Bickler, Donald B.; and Gallagher, Brian D., 4,524,237, Cl. 136-261.000.
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Allen, Edwin M.; Foust, Eugene C.; Sievert, Steven A.; Fitzgerald, William C.; and Moffitt, Max L., 4,523,842, Cl. 356-124.000.
Bobb, Lloyd C., 4,524,322, Cl. 324-72.000.
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Christianson, Charles L.; and Spurlock, Richard, 4,524,279, Cl. 250-497.100.
Glasgow, D. Gerald; and Satanek, Joseph, 4,524,190, Cl. 525-370.000.

Hollmann, Martin; and Waclawik, Francis J., 4,523,538, Cl. 114-238.000.
Kretschmer, Frank F., 4,524,363, Cl. 343-17.2PC.
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U.S. Philips Corporation: *See*—
Cornick, John A., 4,524,376, Cl. 357-55.000.
de Rooij, Jacobus A. G., 4,524,383, Cl. 358-55.000.
Einhaus, Hermanus F., 4,524,438, Cl. 369-75.100.
Gartner, Georg, 4,524,297, Cl. 313-346.00R.
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Lesieur, Roger R., 4,524,113, Cl. 429-16.000.
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Unitika, Limited: *See*—
Masumoto, Tsuyoshi; Inoue, Akihisa; and Hagiwara, Michiaki, 4,523,626, Cl. 164-463.000.
University of Akron: *See*—
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University of Bordeaux 1, The: *See*—
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UOP Inc.: *See*—
Cleary, Michael T.; Kulprathipanja, Santi; and Neuzil, Richard W., 4,524,029, Cl. 260-419.000.
Cleary, Michael T.; Kulprathipanja, Santi; and Neuzil, Richard W., 4,524,030, Cl. 260-419.000.
Haensel, Vladimir, 4,524,230, Cl. 585-467.000.
House, David W., 4,524,223, Cl. 568-715.000.
Qualeatti, Gail M.; Rosen, Bruce I.; Arena, Blaise J.; and Germanas, Dalia, 4,524,225, Cl. 568-885.000.
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Ushikoshi, Kenichi, to Kabushiki Kaisha Suwa Seikosha. Multi-function analog electronic timepiece. 4,523,857, Cl. 368-157.000.
Usui Kokusai Sangyo Kabushiki Kaisha: *See*—
Ryu, Hideo, 4,523,554, Cl. 123-193.00C.
Valenty, Vivian B., to A. E. Staley Manufacturing Company. Detergent builder. 4,524,009, Cl. 252-89.100.
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Pullinen, Martti, 4,523,978, Cl. 162-300.000.
van der Lely, Cornelis. Tractor for agricultural purposes. 4,523,656, Cl. 180-24.000.
Vanderpool, Steven H., to Texaco Inc. Catalyst for preparation of linear polyethylenepolyamines. 4,524,143, Cl. 502-208.000.
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Bergman, Jan; Van Genderen, Pieter; and Hol, Willem A., 4,524,358, Cl. 343-7.700.
Bergman, Jan; Van Genderen, Pieter; and Hol, Willem A., 4,524,360, Cl. 343-17.10R.
van Kemenade, Johannes T. C.: *See*—
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Petric, Paul F.; and Foley, Michael S., 4,524,261, Cl. 219-121.0EL.
Varwig, Juergen: *See*—
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Gilding, Denis K.; and Clarke, Roy M., 4,524,036, Cl. 264-10.000.
Vatterott, Karl-Heinz: *See*—
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Vaughan, James M., to Borg-Warner Chemicals, Inc. Polyphenylene ether compositions having improved processability. 4,524,179, Cl. 525-68.000.
VEB Kombinat Medizin-und Labortechnik Leipzig: *See*—
Breustedt, Alfred; Taschner, Heinz; Korf, Rainer; and Lorenz, Renate, 4,523,912, Cl. 433-202.000.
Veltri, Douglas F. Dispensing cap. 4,523,694, Cl. 221-265.000.
Venkatesan, Valadi N., to Mobil Oil Corporation. Oil recovery process employing CO_2 produced in situ. 4,523,642, Cl. 166-272.000.
Verma, Manoranjan P. High voltage insulator assemblage having specially-chosen series resistance. 4,524,404, Cl. 361-132.000.
Vessey, John R.; Patel, Chandrakant M.; and Armstrong, Jack, to Excel Corporation. Transfer device. 4,523,673, Cl. 198-486.000.
Victor Company of Japan, Limited: *See*—
Fujii, Yasuhiko, 4,524,445, Cl. 371-47.000.
Kasuga, Masao, 4,524,422, Cl. 364-724.000.
Oguri, Katsuhiko, 4,524,439, Cl. 369-136.000.
Vidalin, Jacques; and Aucouturier, Jean L., to University of Bordeaux 1, The. Method for making comparisons between reference logical entities and logical entities proceeding from a file. 4,524,427, Cl. 364-900.000.
Viio, Matti. Tool holder. 4,523,702, Cl. 224-101.000.
Viswanathan, Tito; and Richardson, Thomas, to Chemical Process Corporation. Thermosetting adhesive resins. 4,524,164, Cl. 524-14.000.
Vives, Charles, to Aluminium Pechiney. Process for casting metals in which magnetic fields are employed. 4,523,628, Cl. 164-468.000.
Vivitar Corporation: *See*—
Kreitzer, Melvyn H., 4,523,816, Cl. 350-444.000.
Voest-Alpine Aktiengesellschaft: *See*—
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Voges, Robert W.: *See*—
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Voisin, Eugene J.; Matthelie, Jean-Pierre A.; and Mesny, Jacques A., to Institut Textile de France. Regulating device for the length of thread absorbed by a knitting machine. 4,523,440, Cl. 66-146.000.
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WABCO Westinghouse Fahrzeugbremsen GmbH: *See*—
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Wachter, Gerhard, to Rasmussen GmbH. Hose clip. 4,523,352, Cl. 24-20.0TT.
Waclawik, Francis J.: *See*—
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Wagner, William R.: *See*—
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Wahlquist, Clayton C., to Tektronix, Inc. Convergence control system for multigun CRT. 4,524,307, Cl. 315-368.000.
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Walch, Axel; Seifried, Walter; Michel, Wolfgang; Kuhls, Jurgen; and Wildhardt, Juergen, to Hoechst Aktiengesellschaft. Open-cell/microporous molded article. 4,524,155, Cl. 521-64.000.
Walker, Bertice E., Jr.; and Hyder, Richard J., to Allied Corporation. Method of assembling an actuating lever to a potentiometer. 4,523,373, Cl. 29-593.000.
Walker, Graham S.: *See*—
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Walker, Jack A., to PORTEC. Rear travel guidance system. 4,524,314, Cl. 318-587.000.
Walker, Robert L. Shaker. 4,523,855, Cl. 366-211.000.
Wally, Michael, to Chemie und Filter GmbH Verfahrenstechnik KG. Diaphragm pump for use in an explosive atmosphere. 4,523,902, Cl. 417-410.000.

Walter, Jerry D.; and Stogner, Claude R., to United Technologies Corporation. Tandem bearing construction. 4,523,864, Cl. 384-613.000.
Walter, John, to Continental Group, Inc., The. Adhesive applicator. 4,523,540, Cl. 118-63.000.
Walter, Thomas J.; and Ranken, Paul F., to Ethyl Corporation. 4-(4-Pyridinyl)isatoic anhydride. 4,524,203, Cl. 544-94.000.
Wan, Chung-Chu; Wang, Rong Y.; and Kapoor, Deepak, to Allied Corporation. Boron containing rapid solidification alloy and method of making the same. 4,523,950, Cl. 75-123.00B.
Wang, Rong Y.: *See*—
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Wang, Shu-Chieh P.; and Sherwin, Martin B., to W. R. Grace & Co. Preparation of nitro compounds by vapor phase nitration of aldehydes. 4,524,226, Cl. 562-948.000.
Wang, Taylor G.: *See*—
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Wang, Tweng-Huang. Automatic pneumatic hydraulic jack. 4,523,743, Cl. 254-93.00H.
Wanner, Roland: *See*—
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Warren, Wiley W. Crab meat extractor and method of extraction. 4,523,349, Cl. 17-46.000.
Waschow, Dale T. Solar heating apparatus with solar heat receiving means and heat storage and distribution means. 4,523,576, Cl. 126-422.000.
Washington, Leonard. Car top rod and reel carrier apparatus. 4,523,704, Cl. 224-328.000.
Watanabe, Koji, to Matsushita Electric Industrial Co., Ltd. Sound reproduction system having sonic image localization networks. 4,524,451, Cl. 381-1.000.
Watanabe, Makio: *See*—
Sato, Masaaki; Kaneda, Aizo; and Watanabe, Makio, 4,524,369, Cl. 346-135.100.
Watkins, Dennis W., to Air Sensors, Inc. Hot wire anemometer. 4,523,461, Cl. 73-204.000.
Watkins, Jonathan, to Watkins Manufacturing Co. Means providing moving water stream ejecting into spa tank. 4,523,340, Cl. 4-542.000.
Watkins Manufacturing Co.: *See*—
Watkins, Jonathan, 4,523,340, Cl. 4-542.000.
Watson Bowman Associates: *See*—
Watson, Stewart C., 4,524,174, Cl. 524-566.000.
Watson, Stewart C., to Watson Bowman Associates. Reinforced elastomer products. 4,524,174, Cl. 524-566.000.
Weber, Lynda D.; Merkel, Paul B.; and Warren, Harold C., III, to Eastman Kodak Company. Substituted 4-nitrophenylazo-1-naphthol cyan dyes having improved light stability. 4,524,122, Cl. 430-223.000.
Weber, Robert J., Jr., to Union Carbide Corporation. High solids acrylic coating systems. 4,524,183, Cl. 525-162.000.
Weber-Stephen Products Co.: *See*—
Schlosser, Erich J., 4,523,574, Cl. 126-25.00R.
Weck, Franz, to H. Krantz GmbH & Co. Volume flow or pressure regulating device. 4,523,609, Cl. 137-499.000.
Weeks, Gary L.: *See*—
Bower, Allen M.; and Weeks, Gary L., 4,523,700, Cl. 222-505.000.
Wegener, Ingo: *See*—
Reuter, Herbert; Seiter, Wolfgang; and Wegener, Ingo, 4,524,010, Cl. 252-135.000.
Weiβ, Heinz, to Deere & Company. Transmission gear for transverse mounting and motor vehicle with transmission gear mounted therein. 4,523,493, Cl. 74-695.000.
Weidenhaupt, Wolfgang: *See*—
Schild, Franz; and Weidenhaupt, Wolfgang, 4,523,425, Cl. 57-212.000.
Weidig, Charles F., to Ethyl Corporation. Alkylated phenol purification. 4,524,222, Cl. 568-711.000.
Weise, Lutz: *See*—
Belart, Juan; Burgdorf, Jochen; Kircher, Dieter; Bleckmann, Hans-Wilhelm; and Weise, Lutz, 4,523,791, Cl. 303-92.000.
Weiss, Arno; and Ulrich, Jorn, to B.A.T. Cigarettenfabriken GmbH. Process for improving the filling capacity of tobacco material. 4,523,598, Cl. 131-291.000.
Weisser, Erich: *See*—
Thevis, Paul; Danner, Helmut; and Weisser, Erich, 4,523,509, Cl. 89-129.020.
Wentworth, Milo R., to Honeywell Inc. Sleeve valve actuator means. 4,523,737, Cl. 251-4.000.
Wermuth, Camille-Georges: *See*—
Kan, Jean-Paul; Biziere, Kathleen; and Wermuth, Camille-Georges, 4,524,070, Cl. 514-230.000.
Werner, Walter; Herzog, Klaus; and Szenger, Franz, to Carl-Zeiss-Stiftung. Work-contact probe head for coordinate-measuring instruments. 4,523,382, Cl. 33-169.00R.
Wesseler, Martin G.: *See*—
Temple, Russell A.; Wesseler, Martin G.; Harper, David C.; Eiland, Harry F.; and Tellkamp, Robert G., 4,523,837, Cl. 355-51.000.
West, Herbert J.: *See*—
Mayer, Robert E.; Magoon, Inder K.; and West, Herbert J., 4,523,508, Cl. 89-7.000.
West, James E.: *See*—
Lindenberger, W. Stewart; Poteat, Tommy L.; and West, James E., 4,524,247, Cl. 179-111.00R.
Westinghouse Electric Corp.: *See*—
Charles, Robert G.; and Hickam, William M., 4,523,996, Cl. 210-504.000.
Cotton, John F., 4,524,338, Cl. 335-8.000.
Hollmann, Martin; and Waclawik, Francis J., 4,523,538, Cl. 114-238.000.
Marchetti, Joseph R.; and Sanjana, Zal N., 4,524,107, Cl. 428-413.000.
Sun, Shan C.; and McGivern, James P., 4,524,446, Cl. 371-22.000.
Weyl, Helmut: *See*—
Heinemann, Wolfgang; Noack, Rainer; and Weyl, Helmut, 4,524,038, Cl. 264-61.000.
Whatman Reeve Angel Public Limited Company: *See*—
Seager, Nigel J., 4,524,103, Cl. 428-338.000.
Wheeler, Donald D.: *See*—
Lodge, Daniel A.; and Wheeler, Donald D., 4,523,366, Cl. 29-564.600.
Wheeler, Larry A., to Allergan Pharmaceuticals, Inc. Ophthalmic compositions. 4,524,063, Cl. 424-78.000.
Wheeler, Lee A.: *See*—
Julian, John C.; Sloan, Jerry L.; and Wheeler, Lee A., 4,523,503, Cl. 83-403.000.
White, Stanley A., to Rockwell International Corporation. Adaptive spectrum shaping filter. 4,524,424, Cl. 364-724.000.
Wick, Arnold, to Ciba-Geigy Corporation. Process for the mass coloration of polymers. 4,524,168, Cl. 524-190.000.
Widditsch, H. Robert. Hook assembly. 4,523,357, Cl. 24-230.50R.
Wideman, Lawson G.: *See*—
Hsu, Wen-Liang; Maly, Neil A.; Matrana, Barry A.; Strozier, Robert W.; and Wideman, Lawson G., 4,524,233, Cl. 585-606.000.
Wiegers, Wilhelmus J.; and Sprecker, Mark A., to International Flavors & Fragrances Inc. Perfumery uses of esters of phenyl alkanols. 4,524,021, Cl. 252-522.00R.
Wiegner, Dieter: *See*—
Brandt, Horst; Gehrke, Gunter; Muders, Rolf; Otten, Hans-Gunter; and Wiegner, Dieter, 4,523,926, Cl. 8-639.000.
Wiesinger, Horst: *See*—
Holleis, Gunter; and Wiesinger, Horst, 4,523,623, Cl. 164-436.000.
Wiklund, Klas R., to Wirab System A.B. Room ventilator. 4,523,630, Cl. 165-18.000.
Wildhardt, Juergen: *See*—
Walch, Axel; Seifried, Walter; Michel, Wolfgang; Kuhls, Jurgen; and Wildhardt, Juergen, 4,524,155, Cl. 521-64.000.
Wilhelm, Gary, to Demro Products, Inc. Combined selector, safety and trigger assembly for automatic firearms. 4,523,510, Cl. 89-141.000.
Willert, Otto. Composite profiled member. 4,524,112, Cl. 428-595.000.
Williams, Richard S.: *See*—
Hartman, Robert L.; Koszi, Louis A.; Williams, Richard S.; and Zilko, John L., 4,523,961, Cl. 148-1.500.
Willis, Donald H., to RCA Corporation. Regulated power supply circuit. 4,524,411, Cl. 363-21.000.
Willis, Donald H.; and Fuhrer, Jack S., to RCA Corporation. Digital signal processing apparatus having digital dither. 4,524,447, Cl. 375-26.000.
Williston, William H., to Norton Company. Method of manufacturing composite grinding wheel. 4,523,930, Cl. 51-293.000.
Wilner, L. Bruce; and Wong, Herbert V., to Becton, Dickinson and Company. High temperature layered silicon structures. 4,523,964, Cl. 148-33.200.
Wilson, Herbert C.; and Sankaran, Perumalagaram S., to Dresser Industries, Inc. Arm release system for well logging apparatus. 4,523,640, Cl. 166-64.000.
Wilson, Lonny L.: *See*—
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Wilson, Stephen S.: *See*—
Holsztynski, Wlodzimierz; and Wilson, Stephen S., 4,524,455, Cl. 382-41.000.
Windings, Inc.: *See*—
Kotzur, Frank W., 4,523,723, Cl. 242-43.00R.
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Windmoller & Holscher: *See*—
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Wixon, Harold E., to Colgate-Palmolive Company. Fabric softening and fluffing detergent composition. 4,524,012, Cl. 252-174.000.
Wolf, Holly J.: *See*—
Kominek, Leo A.; and Wolf, Holly J., 4,524,134, Cl. 435-61.000.
Wolf, Karl H., to Luitpold-Werk Chemisch-pharmazeutische Fabrik. Process for the preparation of injectable chondroitin polysulfate. 4,524,066, Cl. 514-23.000.
Wolf, Lawrence R.: *See*—
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Wolf, Peter H.: Dobson, Thomas A.; and Rozo, Rafael, to Dataproducts Corporation. Print hammer assembly method. 4,524,259, Cl. 219-69.00R.
Wolf, Philip F.: *See*—
Taylor, Glenn A.; and Wolf, Philip F., 4,524,224, Cl. 568-858.000.
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Wolfrum, Gerhard: *See*—
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Wong, Herbert V.: *See*—
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Wright, Christopher J.; and Sampson, Christopher F., to United Kingdom Atomic Energy Authority. Catalyst preparation and oxidation of carbon monoxide with said catalyst. 4,524,051, Cl. 423-247.000.
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Hammond, Thomas J.; and Lama, William L., 4,524,289, Cl. 307-110.000.
Hubler, Lawrence C., 4,523,750, Cl. 270-53.000.
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Lok, Kar P.; and Ober, Christopher K., 4,524,199, Cl. 527-313.000.
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Yachia, Daniel; and Lynch, Henry W., to Medical Engineering Corporation. Penile erectile system. 4,523,584, Cl. 128-79.000.
Yada, Isao: *See*—
Hisajima, Masahiko; Kimura, Hiroshi; Shigemura, Yutaka; Yada, Isao; Irie, Yoichiro; Morimoto, Kiyoshi; and Nagashima, Takashi, 4,523,754, Cl. 271-264.000.
Yaeger, John R.: *See*—
Morgan, Robert K.; and Yaeger, John R., 4,524,343, Cl. 337-140.000.
Yaguchi, Svetlana: *See*—
Andreini, Rockne J.; Farmer, Audley J.; and Yaguchi, Svetlana, 4,523,951, Cl. 75-126.00B.
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Yakubek, Louis, to Owens-Illinois, Inc. Flashlight. 4,524,409, Cl. 362-189.000.
Yamac, Yucel, to Braun Aktiengesellschaft. Electric travel iron using portable hair-dryer as the heat source. 4,524,263, Cl. 219-249.000.
Yamada, Takahiro, to Hitachi, Ltd.; and Hitachi Koki Co., Ltd. Ink jet charge phasing apparatus. 4,524,366, Cl. 346-75.000.
Yamada, Yoshiyasu. Window mould. 4,523,783, Cl. 296-93.000.
Yamada, Yu, to Canon Kabushiki Kaisha. Image forming apparatus. 4,523,838, Cl. 355-66.000.
Yamagishi, Seiichi: *See*—
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Yamaguchi, Namio: *See*—
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Yamaguchi, Takaharu: *See*—
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Yamaguchi, Tomoyuki: *See*—
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Yamaji, Katsuhiko: *See*—
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Yamamoto, Hachizou: *See*—
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Yamamoto, Kazuhiro; and Isono, Tokio, to Honda Giken Kogyo Kabushiki Kaisha. Rear suspension for a motorcycle. 4,523,659, Cl. 180-227.000.
Yamamoto, Kazuji: *See*—
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Yamamoto, Keisaku; Yoshida, Nobuyuki; Okamoto, Yasushi; Imai, Akio; Seki, Tomoaki; Furukawa, Hiroshi; and Saito, Yuichi, to Sumitomo Chemical Company, Ltd.; and Sumitomo Rubber Industries, Ltd. Branched polymer, process for the preparation thereof, tire tread rubber composition and tire. 4,523,618, Cl. 152-209.00R.
Yamamoto, Masahiro: *See*—
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Yamamoto, Masanori: *See*—
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Yamamoto, Shu: *See*—
Sakaguchi, Haruo; Seki, Norio; Yamamoto, Shu; and Okada, Akira, 4,523,802, Cl. 350-96.120.
Yamamoto, Yoshio: *See*—
Yemoto, Jiichiro; Tarao, Ryokichi; and Yamamoto, Yoshio, 4,524,018, Cl. 252-522.00A.
Yamasaki, Yasuo: *See*—
Onodera, Tamio; Sakai, Tokuji; Yamasaki, Yasuo; and Sumitani, Koji, 4,524,055, Cl. 423-328.000.
Yamashita, Mitsuo; Oda, Goro; and Kamiya, Masashi, to Tokyo Shibaura Denki Kabushiki Kaisha. Polygonal mirror optical deflector. 4,523,800, Cl. 350-6.700.
Yamato, Akihiro; and Kishi, Noriyuki, to Honda Giken Kogyo Kabushiki Kaisha. Fuel supply control method for internal combustion engines at acceleration. 4,523,571, Cl. 123-492.000.
Yamazaki, Kaoru; Kurioka, Shunichiro; Sakata, Mitsuya; and Ogawa, Takahiro, to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha. Modacrylic synthetic fiber having an excellent devitrification preventing property and a process for preparing the same. 4,524,193, Cl. 526-79.000.
Yamazaki, Shinichi: *See*—
Miki, Shinji; Nishio, Toyokazu; Matsuyama, Shinzo; and Yamazaki, Shinichi, 4,523,874, Cl. 405-43.000.
Yan, Tsoung-Yuan: *See*—
Fowles, Patrick E.; and Yan, Tsoung-Yuan, 4,524,227, Cl. 585-408.000.
Fowles, Patrick E.; and Yan, Tsoung-Yuan, 4,524,228, Cl. 585-408.000.
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Yanagisawa, Taminori; Yamaguchi, Takaharu; and Fukatsu, Hiroshi, to Toyota Jidosha Kabushiki Kaisha; and Taihoo Seiki Co., Ltd. Workpiece transferring apparatus. 4,523,670, Cl. 198-403.000.
Yang, David S.: *See*—
Gower, Irving W.; Cherry, Carl J.; and Yang, David S., 4,523,949, Cl. 75-24.000.
Yasui, Hiroyoshi; Yoshida, Teruo; Ueno, Hiroshi; and Tsumura, Katsunori, to Koyo Seiko Company Limited. Tapered roller bearing. 4,523,862, Cl. 384-564.000.
Yazolino, Lauren F.: *See*—
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Yemoto, Jiichiro; Tarao, Ryokichi; and Yamamoto, Yoshio, to Chisso Corporation; and S.T. Chemical Co., Ltd. Lasting fragrant article using gradually decomposing perfume. 4,524,018, Cl. 252-522.00A.
Yevich, Joseph P.: *See*—
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Yokoo, Makoto; Nakatomi, Yoshitsugu; and Hashimoto, Shinichi, to Tokyo Shibaura Denki Kabushiki Kaisha. Copying apparatus with openable upper housing. 4,523,831, Cl. 355-3.00R.
Yokota, Mitsuyoshi; and Matsumoto, Akio, to Mitsubishi Denki Kabushiki Kaisha. Control for pumping devices used in vehicles. 4,524,311, Cl. 318-481.000.
Yokota, Mitsuyoshi: *See*—
Matsumoto, Akio; and Yokota, Mitsuyoshi, 4,524,312, Cl. 318-481.000.
Yokoyama, Hiroshi: *See*—
Kuge, Toshio; Yokoyama, Hiroshi; Nogita, Shunsuke; Nakamura, Yoichi; and Muroi, Katsumi, 4,523,927, Cl. 44-1.00B.

Yokoyama, Kenji, to Nippon Gakki Seizo Kabushiki Kaisha. Pulse-width modulation circuit with carrier signal frequency control. 4,524,335, Cl. 332-9.00R.
Yokoyama, Naokata, to Ciba-Geigy Corporation. Certain -2-heterocycle substituted pyrazoloquinolines. 4,524,146, Cl. 514-273.000.
Yokoyama, Tatsuro: *See*—
Sakano, Isao; Yokoyama, Tatsuro; Kajiya, Seitaro; Okazaki, Yutaka; Tokuda, Hiroshi; Kawazura, Hiroshi; Kumakura, Mikio; and Awaya, Akira, 4,524,147, Cl. 514-274.000.
Yonezawa, Tatuo: *See*—
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Yoo, Byung E. Air ventilator. 4,523,434, Cl. 62-116.000.
Yordanov, Nikolay V.: *See*—
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Yoshibayashi, Shigeru: *See*—
Shima, Ichiji; Yoshibayashi, Shigeru; and Taniguti, Ryosuke, 4,524,355, Cl. 340-870.130.
Yoshida, Hatsuyoshi; Fukutome, Michio; Ohuchi, Makoto; and Ohta, Jyun, to Kabushiki Kaisha Tokai Rika Denki Seisakusho; and Toyota Jidosha Kabushiki Kaisha. Pressure switch. 4,524,254, Cl. 200-83.00R.
Yoshida, Keiichiro. Hot working method and apparatus in the swaging working technology. 4,523,445, Cl. 72-69.000.
Yoshida, Ken: *See*—
Nishizaki, Tomoyoshi; Miyamoto, Minoru; Miyamoto, Kazuaki; Yoshida, Ken; Yamaji, Katsuhiko; and Nakata, Yasushi, 4,523,635, Cl. 165-104.120.
Yoshida Kogyo K.K.: *See*—
Gartner, Karl, 4,523,518, Cl. 98-31.000.
Gartner, Karl, 4,523,716, Cl. 237-56.000.
Yoshida, Nobuyuki: *See*—
Yamamoto, Keisaku; Yoshida, Nobuyuki; Okamoto, Yasushi; Imai, Akio; Seki, Tomoaki; Furukawa, Hiroshi; and Saito, Yuichi, 4,523,618, Cl. 152-209.00R.
Yoshida, Teruo: *See*—
Yasui, Hiroyoshi; Yoshida, Teruo; Ueno, Hiroshi; and Tsumura, Katsunori, 4,523,862, Cl. 384-564.000.
Yoshida, Tomio: *See*—
Uematsu, Takao; Honma, Yoshiharu; Tanno, Seikichi; Ito, Ran; Matsubayashi, Jun; and Yoshida, Tomio, 4,523,668, Cl. 192-107.00M.
Yoshikawa, Hideo: *See*—
Baba, Takeshi; Nose, Noriyuki; Yoshikawa, Hideo; Minoura, Kazuo; Hasu, Akinori; Minami, Setsuo; and Matsuoka, Kazuhiko, 4,523,801, Cl. 350-6.800.
Yoshino Kogyosho Co., Ltd.: *See*—
Hayashi, Yoshiaki; Haraguchi, Kouichi; and Koshidaka, Yukio, 4,524,045, Cl. 264-521.000.
Yoshino, Yasuhisa: *See*—
Kodera, Masao; Akita, Shigeyuki; and Yoshino, Yasuhisa, 4,524,356, Cl. 340-904.000.
Yoshioka, Junichi; Koizumi, Koichi; Kanai, Akira; and Shiba, Kazuo, to Citizen Watch Co., Ltd. Composite guide mechanism. 4,523,410, Cl. 51-166.00R.
Youngberg, Charles: *See*—
Miller, Charles G., deceased; Stephens, James B.; and Youngberg, Charles, 4,523,808, Cl. 350-146.000.
Yuasa, Hayami: *See*—
Kimura, Tetsuo; Fujii, Hirofumi; Yuasa, Hayami; and Yonezawa, Tatuo, 4,524,351, Cl. 340-629.000.
Yurchenco, James R.: *See*—
Fish, Russell, III; and Yurchenco, James R., 4,524,242, Cl. 178-4.000.
Zacharias, Ellis M., Jr., to Nusonics, Inc. Sonic flow meter having improved flow straighteners. 4,523,478, Cl. 73-861.280.
Zacharias, Theodor, to Kocks Technik GmbH & Co. Tube testing presses. 4,523,455, Cl. 73-49.500.
Zado, Frank M., to AT&T Technologies, Inc. Soldering composition and method of soldering therewith. 4,523,712, Cl. 228-207.000.
Zannucci, Joseph S.: *See*—
Musser, Harry R.; Strickland, Thomas H.; and Zannucci, Joseph S., 4,524,165, Cl. 524-99.000.
Zavattini, Omero: *See*—
Greco, Alberto; Bertolini, Guglielmo; and Zavattini, Omero, 4,524,187, Cl. 525-332.100.
Zibell, J. Scott. Method and apparatus for automatic detection and treatment of ventricular fibrillation. 4,523,595, Cl. 128-419.00D.
Zilko, John L.: *See*—
Hartman, Robert L.; Koszi, Louis A.; Williams, Richard S.; and Zilko, John L., 4,523,961, Cl. 148-1.500.
Zimpro Inc.: *See*—
Sit, Song-P., 4,524,049, Cl. 423-65.000.
Ziph, Benjamin: *See*—
Meijer, Roelf J.; and Ziph, Benjamin, 4,523,636, Cl. 165-104.260.
Zivin, Justin A. Reduction of stroke damage. 4,524,072, Cl. 514-280.000.
Zolnowsky, John E.: *See*—
Mills, Marvin A., Jr.; Moyer, William C.; MacGregor, Douglas B.; and Zolnowsky, John E., 4,524,415, Cl. 364-200.000.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 18TH DAY OF JUNE, 1985

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Becton Dickinson & Company: *See*—
Oswin, Harry G.; and Blurton, Keith F., Re. 31,914, Cl. 204-1.00T.
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Turner, Timothy L.; and Pileggi, Frank R., to National Can Corporation. End closure for a container. 279,265, 6-18-85, Cl. D9-438.000.
Ueda, Thomas K., to Sony Corporation. Control console for a video-tape recorder remote controller. 279,291, 6-18-85, Cl. D14-77.000.
Ujiie, Masumi, to Sony Corporation. Packing box for video cassettes. 279,263, 6-18-85, Cl. D9-432.000.
Ujiie, Masumi, to Sony Corporation. Packing box for video cassettes. 279,264, 6-18-85, Cl. D9-432.000.
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Hutz, John A., 279,281, Cl. D12-149.000.
Vanderminden, Robert D. Chair. 279,243, 6-18-85, Cl. D6-370.000.
Varela, Jose R.: *See*—
Bhat, Ghanshyam A.; Chan, Eric P. P.; Lamancusa, John S.; Sylvester, Gordon E.; and Varela, Jose R., 279,289, Cl. D14-60.000.
Wagner, Curtis D., to Curtis Wagner Co., Inc. Floral container. 279,279, 6-18-85, Cl. D11-143.000.
Wilson Jones Company: *See*—
Semerjian, Joseph K.; and Lodge, Glenn R., 279,299, Cl. D19-72.000.
Wind Baron Corporation: *See*—
Sutz, Richard K., 279,293, Cl. D15-1.000.
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Ecke, Paul, Jr.: *See*—
Deibel, Dennis, 5,497, Cl. 86.000.
Gesellschaftsvertrag uber die Erfindergemeinschaft "Optimara": *See*—
Holtkamp, Reinhold, 5,493, Cl. 69.000.
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CLASSIFICATION OF PATENTS

ISSUED JUNE 18, 1985

NOTE.—First number, class; second number, subclass; third number, patent number

CLASS 2

49 R 4,523,333
4,523,334
51 4,523,335
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CLASS 4

191 4,523,339
542 4,523,340
555 4,523,341

CLASS 5

250 4,523,342
450 4,523,343
477 4,523,344

CLASS 8

405 4,523,921
471 4,523,922
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527 4,523,924
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CLASS 19

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30.5 R 4,523,353
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105 4,523,389
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159 4,523,401
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CLASS 44

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465 4,523,407
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166 R 4,523,410
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CLASS 52

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97 4,523,933
189 4,523,934
282 4,523,935
429 4,523,936
509 4,523,937

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125 4,523,424
212 4,523,425
247 4,523,426
248 4,523,427
288 4,523,428

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203.1 4,523,429
420 4,523,430
431 4,523,431
659 4,523,432

CLASS 62

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212 4,523,435
222 4,523,436
238.4 4,523,437
238.6 4,523,438
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90 4,523,943
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93 4,523,947
092 4,523,946

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69 4,523,445
71 4,523,446
144 4,523,447
185 4,523,448
421 4,523,449

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40 4,523,452
40.7 4,523,453
49.2 4,523,454
49.5 4,523,455
64.4 4,523,456
114 4,523,457
119 A 4,523,458
155 4,523,459
200 4,523,460
204 4,523,461
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4,523,463
216 4,523,464
290 V 4,523,465
573 4,523,467
579 4,523,466
598 4,523,468
603 4,523,469
623 4,523,470
626 4,523,471
632 4,523,472
643 4,523,473
724 4,523,474
744 4,523,476
781 4,523,475
861.02 4,523,477
861.28 4,523,478
861.35 4,523,479
861.56 4,523,480
861.61 4,523,481
862.36 4,523,482
862.54 4,523,483
864.12 4,523,484

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360 4,523,491
378 4,523,487
471 XY 4,523,488
474 4,523,489
582 4,523,490
594.4 4,523,492
695 4,523,493
710.5 4,523,494
714 4,523,495
866 4,523,496

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7 4,523,948
24 4,523,949
123 B 4,523,950
126 B 4,523,951

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177.1 4,523,498

CLASS 82

4 A 4,523,499

CLASS 83

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42 4,523,501
71 4,523,502
403 4,523,503
471.3 4,523,504
713 4,523,505

CLASS 84

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CLASS 89

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4,523,508
129.02 4,523,509
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CLASS 91

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427 4,523,513

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2.1[1] 4,523,870
31 4,523,518
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CLASS 99

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CLASS 100

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CLASS 101

219 4,523,522
235 4,523,523

CLASS 102

374 4,523,524

CLASS 104

173 ST 4,523,525

CLASS 106

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23 4,523,953
110 4,523,954
120 4,523,955
243 4,523,956
277 4,523,957
288 Q 4,523,958

CLASS 108

149 4,523,526

CLASS 109

19 4,523,527
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CLASS 110

263 4,523,529
264 4,523,530
336 4,523,531
347 4,523,532

CLASS 112

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231 4,523,534
288 4,523,535

CLASS 114

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238 4,523,538
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CLASS 118

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202 4,523,541
663 4,523,542
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CLASS 119

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51 R 4,523,546
52 B 4,523,547

CLASS 123

1 A 4,523,548
58 BC 4,523,549
90.15 Re.31,917
90.16 4,523,550
90.46 4,523,551
143 B 4,523,552
192 B 4,523,553
193 C 4,523,554
4,523,555
196 W 4,523,556
197 AB 4,523,557
198 F 4,523,558
306 4,523,559
308 4,523,560
339 4,523,561
357 4,523,562
359 4,523,563
361 4,523,564
399 4,523,565
425 4,523,566
4,523,567
453 4,523,568
458 4,523,569
478 4,523,570
492 4,523,571
494 4,523,572

CLASS 124

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CLASS 126

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422 4,523,576
430 4,523,577
443 4,523,578

CLASS 127

46.2 4,523,959
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CLASS 128

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71 4,523,582
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80 C 4,523,585
82 4,523,586
92 C 4,523,587
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334 C 4,523,592
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CLASS 135

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CLASS 136

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CLASS 137

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102 4,523,604
119 4,523,606
218 4,523,607
315 4,523,608
467 4,523,602
499 4,523,609
512.15 4,523,610
804 4,523,611

CLASS 138

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121 4,523,613

CLASS 139

355 4,523,614

CLASS 141

1 4,523,615
83 4,523,616

CLASS 144

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1.5 4,523,961
4,523,962
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33.2 4,523,964
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CLASS 149

2 4,523,967

CLASS 152

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527 4,523,619

CLASS 156

73.5 4,523,968
161 4,523,969
244.11 4,523,970
345 4,523,971
617 SP 4,523,972
626 4,523,973
630 4,523,974
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CLASS 160

315 4,523,620

CLASS 162

259 4,523,977
300 4,523,978

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461 4,523,625
463 4,523,626
467 4,523,627
468 4,523,628

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18 4,523,630
43 4,523,631
47 4,523,632
76 4,523,633
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104.26 4,523,636
104.34 4,523,637
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272 4,523,642
297 4,523,643
302 4,523,644
385 4,523,645

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CLASS 174

26 R 4,523,648
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68.5 4,524,239
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119 R 4,524,241

CLASS 175

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4.56 4,523,650
45 4,523,651
61 4,523,652

CLASS 177

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CLASS 178

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19 4,523,654

CLASS 179

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5 R 4,524,243
18 FA 4,524,246
18 HB 4,524,245
111 R 4,524,247

CLASS 180
9.1 4,523,655
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68.1 4,523,657
68.5 4,523,658
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CLASS 181
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249 4,523,662
403 4,523,663

CLASS 182
233 4,523,664

CLASS 187
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218 XL 4,523,666

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5 B 4,524,248
5A 4,524,249
33 R 4,524,250
38 E 4,524,252
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83 R 4,524,254
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86 R 4,524,256
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59 R 4,523,980
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298 4,523,985
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507 4,523,681

CLASS 208
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157 4,523,987

CLASS 209
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44 4,523,989
138 4,523,990
166 4,523,991
638 4,523,682

CLASS 210
232 4,523,992
297 4,523,993
500.2 4,523,994
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4,523,996
635 4,523,997
638 4,523,998
639 4,523,999
649 4,524,000
713 4,524,001

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266 4,523,691
306 4,523,692
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CLASS 221
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CLASS 222
135 4,523,696
185 4,523,697
4,523,698
189 4,523,699
505 4,523,700

CLASS 223
94 4,523,701

CLASS 224
101 4,523,702
224 4,523,703
328 4,523,704

CLASS 226
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CLASS 227
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8 4,523,695
19 4,523,707

CLASS 228
37 4,523,708
48 4,523,709
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1 C 4,523,713
46 R 4,523,714
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CLASS 237
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CLASS 239
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CLASS 241
37.5 4,523,720
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54 R 4,523,724
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249 4,523,748

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CLASS 270
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610 4,523,772
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655 4,523,774

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CLASS 285
73 4,523,778
294 4,523,779
399 4,523,780

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CLASS 294
1.1 4,523,781
65.5 4,523,782

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100 4,523,784
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CLASS 298
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37 P 4,523,789
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CLASS 303
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CLASS 336
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159 4,524,344

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146 4,523,808
163 4,523,809
320 4,523,810
333 4,523,811
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465 4,523,817
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337 4,523,826
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403 4,523,828
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